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Allied Health Regional Workforce Analysis
Bay Area Region

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Overview

Achieving a culturally competent healthcare workforce is a major focus area for The California Endowment. Part of any strategy to reach this goal should include the large number of healthcare workers, often referred to as the *allied health workforce*. This group is comprised of professionals who provide a range of diagnostic, technical, therapeutic, and direct patient care services, as well as support services. The field of allied health ranges from entry-level occupations requiring minimal educational investment to highly specialized occupations requiring advanced-degree training for entry into practice.

Objective and Approach

The objective of this series of regional reports is to describe and analyze the basic components of the allied healthcare workforce in each of The California Endowment regions: the general population, which represents both an available pool of healthcare labor and the body of healthcare consumers, the current health professions workforce, and the graduates of selected allied health education programs. Although the analysis for these reports is multifaceted, a key theme that is highlighted throughout is the racial/ethnic composition of these workforce components. These reports also include information on current wage levels and projected occupational employment that can be used to evaluate the relationships among wages, employment opportunities, and characteristics of the workforce and population. This report is focused on The California Endowment–designated Bay Area Region, which encompasses six counties: Marin, San Francisco, San Mateo, Santa Clara, Alameda, and Contra Costa.

Twenty-two (22) allied health occupations were selected for a detailed analysis based on several criteria. First, workers in many of these occupations serve as the initial contact, and sometimes the only contact, in the healthcare system for poor, underserved, or special needs communities. Second, many of these occupations represent a substantial number of job opportunities. They are often fast-growing occupations; occupations whose workforce is large, thus producing many job opportunities due to sheer size; or occupations that have both of these characteristics. Finally, these occupations are characterized by a broad range of educational requirements and practice settings. The spectrum of education levels ranges from certificate programs that can be completed in less than one year to master's level training. Professional practice settings include inpatient, outpatient, community, and home. The following occupations are described and analyzed in this report:

- Dental Assistant
- Dental Hygienist
- Medical Assistant
- Pharmacy Technician
- Home Health Aide
- Nursing Assistant
- Licensed Vocational Nurse
- Nurse Practitioner (Advanced Practice Nurse)
- Physician Assistant
- Respiratory Therapist
- Radiologic Technologists
- EMT/Paramedic
- Clinical Laboratory Scientist
- Psychiatric Technician
- Mental Health Counselor
- Substance Abuse/Behavioral Disorder Counselor
- Mental Health/Substance Abuse Social Worker
- Medical/Public Health Social Worker
- Geriatric Social Worker
- Public/Community Health Educator
- Community Health Worker
- Health Care Interpreter

Principal Data Sources

Regional Population

The principal sources of data used to describe the region's current and projected population (over the period 2005-2030) were the California Department of Finance's Demographic Research Unit, and the American Community Survey (ACS) Public Use Microdata Sample (PUMS) for California. In some cases, American Community Survey (ACS) PUMS data from 2006 alone were used, but in other instances PUMS data from both 2005 and 2006 were combined in order to perform more detailed analysis. The estimates presented using this combined dataset should be interpreted as averages over the two-year period of 2005-2006.

Characteristics of the Current Health Professions Workforce

The principal source of data used to describe the Bay Area Region's current health professions workforce was the 2005 and 2006 American Community Survey (ACS) Public Use Microdata Sample (PUMS) for California. PUMS data from the 2005 and 2006 American Community Survey (ACS) were combined for the Bay Area Region in order to obtain a larger number of observations, thus allowing more detailed analyses. As noted above, the estimates presented using this combined dataset should be interpreted as averages over the two-year period of 2005-2006.

Education

All education data were derived from the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS). IPEDS is the most comprehensive source for postsecondary education data available. Though schools occasionally, mistakenly report graduates of a program that they do not actually offer, we have made every reasonable effort to verify the existence of a program when student data were reported for it.

Current and Projected Employment and Median Wages

The 2006 occupational estimates of total employment, 2007 occupational estimates of hourly/annual wages, and 2004-2104 occupational employment projections are from the California Employment Development Department (EDD). These labor market data are presented in as much geographic detail as possible: the metropolitan statistical area (MSA).[1] In the Bay Area Region, there are three MSAs, which encompass the six individual counties and they are designated as follows: Oakland-Fremont-Hayward (Alameda and Contra Costa counties); San Jose-Sunnyvale-Santa Clara (Santa Clara and San Benito counties);[2] San Francisco-San Mateo-Redwood City (Marin, San Francisco and San Mateo counties.

Occupational Descriptions

Occupational titles are defined by the Standard Occupation Classification (SOC) system. Descriptions of each occupation and its respective scope of practice are from the 2006–2007 edition of the Occupational Outlook Handbook, published by the Bureau of Labor Statistics (BLS).

Major Findings

The following section is organized with the findings from each major component of the report grouped together. These include the region's current population, projected

1 These data come from the California Employment Development Department, Labor Market Information Division and are released to the public already aggregated.

2 San Benito County is actually part of the TCE-designated Central Valley Region. However, because of the way in which these labor market data are aggregated, we cannot avoid including San Benito County in this report. For more information see: http://www.labormarketinfo.edd.ca.gov/?PAGEID=94

population, current health professions workforce, recent graduates of selected health professions education programs, and projected occupational employment. Together these findings present a rich and detailed picture that can be used as a basis for regional allied health workforce planning.

Current Population

Over half of the region's population lives in either Santa Clara County (29%) or Alameda County (25%). With the exception of Marin County, the Bay Area Region is highly racially/ethnically diverse (in Marin County, the White population currently represents 78% of the total population). Among the other counties in the region, only Contra Costa County still has a White population majority.

In four of the six counties, Asians represent a share of the population that is two to three times the size of their proportional representation in California's general population. In all six counties, the multiracial population represents a larger share of the population total by comparison with California as a whole. African Americans represent 9% of the population in Contra Costa County and 13% of the population in Alameda County, proportions much greater than the statewide average of 6%. Latino representation is lowest in Marin and San Francisco counties, and throughout the region Latinos are less well represented in comparison with California as a whole. Still, in four of the six counties Latinos account for at least 20% of the population total.

The broad race category of Asian obscures the fact that there are numerous Asian subpopulations in the region.[3] Chinese (37.4%) and Filipinos (21.1%) represent nearly 60% of the Bay Area Region's Asian population. The next largest Asian subpopulations in the region are Asian Indian (14.2%) and Vietnamese (11.5%); collectively these four groups account for nearly 85% of the region's Asian population. In comparison with their presence in California's general population, both Chinese and Asian Indians are disproportionately represented in the Bay Area Region. Groups that are underrepresented in the region's Asian population include Korean, Cambodian, Laotian, and Thai. The data also suggest that Hmong are also underrepresented, but the data are not robust enough to validate this claim.

Nearly one-third of the Bay Area Region's general population is foreign-born (compared with 27% of California's population). Of the region's foreign-born population, roughly

3 Many (but not all) of the possible Asian subpopulations that exist are identified in the data used in this report to describe the region's population and health professions workforce.

75% were born in two geographic regions of the world: East Asia (43%) and Latin America (31%). The five most frequently identified countries of birth are (in descending order): Mexico, China, Philippines, Vietnam, and India. Collectively these five countries represent the place of birth for 59% of the Bay Area Region's foreign-born population.

Many of the key findings from analysis of the region's current population concern the conditions of being Latino. The region's Latino population is younger, less well educated, earn substantially lower wages, and is far more likely to be linguistically isolated as limited English speakers.

- The median age of the region's Latino population is just 28, much younger in comparison to the region's Native Hawaiian/Pacific Islander population (34), Asian population (37), African American population (39), and the region's Native American and White populations (both 44).

- Over the period 2005-2006, nearly 40% of the region's Latino population over the age of 18 reported speaking English either "not well" or "not at all".

- In the region's population over the age of 25, just 15% of Latinos reported having attained a bachelor's degree or higher, compared with 22% of African Americans, 52% of Asians, and 53% of Whites. Similarly, just 5% of Latinos reported having earned a master's degree or higher, compared with 8% of African Americans, 20% of Asians and 22% of Whites.

- The median wage for Latinos is much lower in comparison to other groups. Over the period 2005-2006, half of all Latinos in the region earned $30,000 per year or less. This is roughly $6,000 per year less than the region's Native Hawaiian/Pacific Islander population, $10,000 per year less than the median wage for African Americans and Native Americans, over $18,000 per year less than Asians and approximately $28,000 per year less than the median wage earned by the region's White population.

This focus on the region's Latino population is not meant to overlook the economic and educational status of the region's Native American, Native Hawaiian/Pacific Islander, or African American populations. In terms of earnings and educational attainment, these groups also lag well behind the region's White and Asian populations. However, the statistical evidence indicates that these gaps are more profound for Latinos in comparison.

Projected Population

The Bay Area Region is projected to grow by roughly 1.25 million people over the next two decades. Nearly 90% of this growth is projected for three counties: Santa Clara County (34% of total projected growth), Contra Costa County (31% of total projected growth), and Alameda County (23% of total projected growth). However, none of the counties in the Bay Area Region are growing rapidly; in fact, San Mateo, San Francisco, and Marin counties rank 55th, 56th, and 57th among all counties in the state for relative population growth projected to occur between 2005 and 2030. As is true across California, most of the Bay Area Region's population growth is projected to result from growth in the Latino population (58% of total projected growth) and Asian population growth (30% of total projected growth). However, it must be noted that the available data cannot be used to demonstrate whether specific groups within the broader populations of Latino and Asian are expected to be disproportionately sources of population growth.

The other population phenomenon, occurring in the Bay Area Region and across the state, is tremendous growth in the proportion of the population over the age of 65. In the Bay Area Region, the population over the age of 65 is expected to more than double from roughly 700,000 in 2005 to 1.5 million in 2030.

Population Implications for the Health Professions Workforce

One of the concerns about the aging population is how this growth, when combined with growth of the very youngest segments of the population, will impact the workforce. A growing dependency ratio would be expected to tax systems and infrastructure financed by economic productivity, including social and public health systems. It may also change the mix and type of human resources needed to care for the dependent population, including the need for allied health workers to provide services in acute and long-term care settings and in the home.

Much of the anticipated growth will be in the Latino and Asian population groups. This implies that many future allied health workers will be drawn from these two groups. It will be important to address English speaking ability and education readiness for these groups in order to assure an adequate allied health workforce.

Current Health Professions Workforce

There are important findings among the various allied health occupations in the currently employed workforce. Men comprise a third or less of the workforce. Racial and ethnic diversity shows a pattern seen in other parts of the state. Higher paying occupations with greater educational requirements are much less racially and ethnically diverse than entry level low paying occupations. Latino and African American workers are often overrepresented in low paying, entry level jobs.

In this report, we use representation in the general labor force as a benchmark to analyze representation of specific groups (race/ethnicity; gender) in the region's current health professions workforce. Several characteristics of the health professions

The Bay Area Region is projected to grow by roughly 1.25 million people over the next two decades. Nearly 90% of this growth is projected for three counties: Santa Clara County, Contra Costa and Alameda County.

Graduates of entry-level health education programs are more diverse in comparison to graduates of advanced degree programs, or programs where admission is more competitive. It is most often Latino students who are underrepresented in the selected allied health education programs.

workforce in the Bay Area Region are worth noting. With the exception of *Diagnosing and Treating Practitioners* trained at the master's degree level or higher, women predominate, representing anywhere from 70% to 85% of the workforce in several segments of the health professions workforce. In each of the broad occupational groups, there is an inverse relationship between representation of Latinos and African Americans and educational attainment. For example, Latinos represent 21% of the Bay Area Region's healthcare-related *Counselors, Social Workers, and Community and Social Service Specialists* who hold less than a master's degree, but just 12% of this same occupational group holding a master's degree or higher. Similarly, African Americans represent 9% of *Health Diagnosing and Treating Practitioners* who hold less than a master's degree, but just 2% of this same occupational group holding a master's degree or higher. Conversely, Whites and Asians are disproportionately represented among those segments of health professions workforce that are the most educated and where incomes are highest. Collectively, Whites (64%) and Asian (28%) represent over 90% of Health Diagnosing and Treating Practitioners trained at the master's degree level or higher.

Although Asians are well represented in the region's health professions workforce, the statistical evidence indicates that this representation is uneven among the many Asian subpopulations. We used the Asian labor force as a benchmark, comparing its composition with the composition of Asian healthcare workers. The most important finding is that Filipinos are disproportionately represented among Asian healthcare workers in the region. Filipinos account for roughly 21% of the region's Asian population, but 45% of all Asian healthcare workers. As a result, other Asian subpopulations are less well represented, including: Asian Indians, Chinese, Vietnamese, and Laotians.

Other key findings:

- White healthcare workers are much better educated compared with all other racial/ethnic groups. Approximately 43% of all White healthcare workers hold a master's degree or higher; among Asian healthcare workers this proportion is roughly 28%. Roughly 15% of Latino healthcare workers and just 13% of African American healthcare workers hold a master's degree or higher. In contrast, approximately 30% of Latino and African American healthcare workers hold just a high school degree. The proportion of White (7%) and Asian (11%) healthcare workers that hold just a high school degree is much smaller by comparison.

- More than one-third of African American healthcare workers and nearly one-half of Latino healthcare workers in the region are employed in occupations that represent the healthcare support segment of the health professions workforce.

- There is a substantial earnings gap among the region's health professions workforce. The median wage earned by African American and Latino healthcare workers is roughly $18,000 per year less than Asian healthcare workers and approximately $30,000 per year less than White healthcare workers.
- A larger proportion of the Bay Area Region's health professions workforce is foreign-born,

compared with the general population. Approximately 36% of healthcare workers in the region are foreign-born, versus 32% of the region's general population. Large proportions of both the Asian (79%) and Latino (60%) labor force are foreign-born. However, foreign-born Latinos are far less likely to work in health care.

Recent Graduates of Health Professions Education Programs

There are several key findings from the analysis of data describing graduates of the region's health professions education programs. First, the composition of racial/ethnic diversity observed in the region's current health professions workforce is reflected in the data describing recent graduates of the region's health professions education programs. Graduates of entry-level health education programs are more diverse in comparison to graduates of advanced degree programs, or programs where admission is more competitive. It is most often Latino students who are underrepresented in the selected allied health education programs. To a lesser degree, African American students are underrepresented in advanced degree programs or those with competitive admissions. It is also true that Native American students account for a very small proportion of the graduates of any of the selected education programs, but this is consistent with their presence in region's general population and labor force. Like the currently employed workforce, the recent graduates of education programs for these selected allied health professions tend to be predominately female. There are a few exceptions where males make up about a third or slightly more of the recent graduates; physician assistant, respiratory therapist, and doctoral level psychology. The only allied health profession in which the percent of male graduates far exceeds female is EMT/paramedic; males continue to make up about 75% of the graduates.

A second key finding is that, according to reported data, training for entry-level occupations, such as Medical Assisting and Dental Assisting, is concentrated in the region's private, for-profit institutions. This finding has implications for the cost of education and the roles and responsibilities of the region's community colleges and adult-education programs. A single year of education in a private, for-profit institution can cost in excess of $20,000 per year, compared with the roughly $1,200 per year it costs to attend a California community

college. Strategies to develop the region's allied healthcare workforce should address this issue. Regional workforce planning groups could utilize the information on the supply of educational programs that is appended to this report to examine whether capacity and geographic access to training is adequate for the region.

Racial/Ethnic Representation in Selected Allied Health Education Programs: Latino, African American and Native American Students

As with our analysis of the region's current health professions workforce, we use representation in the Bay Area Region's general labor force as a benchmark to analyze racial/ethnic representation of students in the selected allied health education programs. However, in determining how well or not well represented a specific racial/ethnic group is within a selected educational program, it is important to keep in mind that proportional representation in the general labor force is just a benchmark. We use it as a soft measure and consider proportional representation of a specific group of students in a particular program in relation to all the other programs and across all three years of data.

Not all of the selected education programs had reliable student data that could be used to describe the racial/ethnic composition of recent graduates, including EMT/ Paramedic training programs, Home Health Aide programs, Clinical Laboratory Scientist programs, and programs that train Community Health Workers or Health Care Interpreters. In the listings below, analysis of the racial/ethnic representativeness of these programs is not included.

Latino Students:

- Latino students are well represented in the following programs: Dental Assistant, Medical Assistant, Nursing Assistant/ Aide, Master's in Social Work (MSW).

- Latino students are underrepresented in the following programs: Dental Hygiene, Pharmacy Technician, Licensed Vocational Nursing, Physician Assistant, Substance Abuse/Addiction Counseling (associate's degree),

- Latino students are significantly underrepresented in the following programs: Master of Science in Nursing (MSN), Respiratory Therapy, Radiography, Clinical and Counseling Psychology (master's and doctoral degree levels), Public Health.

African American Students:

- African American students are well represented in the following programs: Dental Assistant, Medical Assistant, Pharmacy Technician, Nursing Assistant/Aide, Licensed Vocational Nursing, Psychiatric Technicians, Substance Abuse/Addiction Counseling (associate's degree), Master's in Social Work (MSW), Public Health, and to a lesser extent Clinical and Counseling Psychology (master's and doctoral degree levels).

- African American students are underrepresented in the following programs: Dental Hygiene, Master of Science in Nursing (MSN), Physician Assistant, Respiratory Therapy, Radiologic Technology.

As noted above, Native Americans represent a very small proportion of the region's population and labor force (approximately 0.26% region-wide). Given this benchmark, it is hard to determine how well Native American students are represented. It may be that two or three Native American students account for 1%-2% of the total number of graduates, in which case we could claim that Native Americans are well represented. In fact, it is rare that reported Native American graduates represent less than 0.5% of the total number of graduates; in the population and labor force, Native Americans never represent more than 0.33% in any one county.

The following programs include those that have reported no Native American graduates in at least one year during the period 2005-2007: Dental Hygiene, Physician Assistant, Master of Science in Nursing (MSN), Respiratory Therapy, Radiologic Technology, Psychiatric Technician, Clinical Psychology (doctoral level), Public Health.

Employment Opportunity

Employment opportunity correlates strongly with the absolute size of the workforce: The larger the workforce, in general, the greater the opportunity for employment. The following four selected occupations (all among the largest in terms of workforce size) are projected to offer the greatest opportunity for employment across the region over the coming decade: Dental Assistant, Medical Assistant, Home Health Aide, and Nursing Assistant/Aide. Furthermore, expected population growth is one of the strongest drivers of employment growth and again, absolute size matters. Santa Clara, Contra Costa and Alameda counties are larger and growing more rapidly than the rest of the region. As a result, employment opportunity will generally be greater in these counties. The aging of the population also impacts the type of occupations that are expected to experience growth. Nursing Assistants and Home Health Aides are largely employed in the long term care field including nursing homes and home care services.

Exceptions to this include opportunities for the selected mental health and social work occupations, which will be concentrated in the Marin/San Francisco/San Mateo labor market and in Alameda and Contra Costa counties. The employment outlook for these occupations in Santa Clara County is comparatively weak. There is a pattern in the projected employment opportunity for these occupations. Employment opportunity for Mental Health Counselors and Medical/Public Health Social Workers is expected

The following four selected occupations are projected to offer the greatest opportunity for employment across the region over the coming decade: Dental Assistant, Medical Assistant, Home Health Aide, and Nursing Assistant/Aide.

to be greater in the Alameda/Contra Costa labor market, while for Substance Abuse/Behavioral Disorder Counselors and Mental Health/Substance Abuse Social Workers employment opportunity is projected to be greater in the Marin/San Francisco/San Mateo labor market.

Other key findings from our analysis of employment projections data include:

- Employment opportunity for Dental Assistants and Dental Hygienists are projected to grow at twice as fast in Santa Clara County compared with the rest of the region.

- Home Health Aide is projected to be the fastest-growing occupation of any selected for analysis in this report. Growth rates are four to five times greater than average, across the region.

- Strong growth is projected for Physician Assistants across the region. However, this workforce is much larger in the Alameda/Contra Costa labor market and so strong growth is expected to translate into a much greater number of employment opportunities in these counties.

- Moderately above average growth is projected for Clinical Laboratory Scientists, but because of an above average turnover rate regional demand can be expected to outpace regional supply.

- The aging of the region's population can be expected to create demand for healthcare professionals with geriatric expertise. There is a movement in the region's educational institutions to develop an "aging savvy" social and mental health workforce, but there are not data that can quantify the relationship between supply and expected demand.

Summary of Major Findings

One of the key issues to emerge from this analysis of the Bay Area Region's population, healthcare workforce, and graduates of the region's selected healthcare education programs are the disparities in representation that broadly divide Latinos and African Americans from Whites and Asians. We cannot confidently say whether and to what extent such disparities in representation may affect the region's Native Hawaiian/Pacific Islander or Native American populations due to data limitations. These limitations also remind us, again, that all categories of race/ethnicity obscure important characteristics of the cultural and linguistic identity of the populations they describe.[4]

In the context of social and economic conditions of the region's general population, Latinos do represent a special case in important ways. They are much younger in comparison to other population groups, median wages are much lower, levels of educational attainment are much lower, and nearly 40% of the region's Latino population over the age of 18 report speaking English either "not well" or "not at all". These are all important factors to consider as part of any effort to address the region's healthcare needs and to develop its allied healthcare workforce.

In the context of the region's current healthcare workforce, it is both Latino and African American healthcare workers who are concentrated in the segment of the healthcare workforce that consists of mainly low paying, entry-level occupations. The racial/ethnic composition of the different broad occupational groups supports this finding, as does the educational attainment profile and the wage earning profile of healthcare workers identified by race/ethnicity.

To a large extent, data describing recent graduates of health professions education programs in the region corroborate the data describing the region's health professions workforce. Latino and African American students are best represented in those training programs that lead to low paying, entry-level healthcare positions. Many of these are programs that can be completed in less than one year and that may not lead to a credential, such as certification. These programs are most frequently offered by private, for-profit institutions. This finding has implications for the cost of education and the roles and responsibilities of the region's community colleges and adult-education programs.

The findings in this report will hopefully be useful to the Bay Area region in developing an overall strategy for allied health workforce development among the different race and ethnicity groups that compose the regional population. Useful policies and programs should focus on recruiting Latino students into healthcare occupations that involve greater educational investment and finding ways to assist current Latino healthcare workers to progress through established career ladders into higher paying healthcare occupations. Unfortunately, there are no readily available sources of data describing career ladder programs,

In the context of the region's current healthcare workforce, it is both Latino and African American healthcare workers who are concentrated in the segment of the healthcare workforce that consists of mainly low-paying, entry-level occupations.

4 For example, in a forthcoming report funded by The California Endowment, "The Well-being of Indigenous Farmworkers", nearly two dozen different languages spoken by indigenous Mexican populations are identified.

Useful policies and programs should focus on recruiting Latino students into healthcare occupations that involve greater educational investment and finding ways to assist current Latino healthcare workers to progress through established career ladders into higher paying healthcare occupations.

neither where they are located, which career paths they serve, nor the extent to which they are accessed by workers. Other than small pilot programs, little is known about the success of career ladder programs.

The factors that might be considered causative with respect to these findings are complex. Race/ethnicity is not monolithic; racial/ethnic groups are dynamic populations that encompass many different languages and cultural heritages. It is plausible that certain groups within these broad categories are disproportionately affected by economic privation, low levels of education, or even display a tendency not to work in allied healthcare occupations. The data used to produce this report do not include the kind of detail needed to explore many of these possibilities. There is extensive literature exploring the intersection of social, economic, and health status and race/ethnicity, but a review of this literature is beyond the scope of this report.

Allied health occupations will offer a great deal of opportunity for employment in the Bay Area Region. It is true that the greatest number of opportunities will come in the form of entry-level occupations that are near the bottom of the wage scale. However, there are also many mid-level occupations that offer entry into practice with a two-year associate's degree and for which the regional employment outlook is strong.

Data indicate that the region's entry-level allied healthcare labor force is already comparatively diverse. Strategies designed to develop a more diverse allied healthcare workforce must focus on attracting Latino, African American, Native American, and underrepresented Asian groups to higher-level education programs where the data suggest they are underrepresented. Another strategy should be to continue to recruit these students into the region's associate degree education programs, and finally to assist entry-level incumbent workers to advance along established career ladders that lead to occupations involving greater decision-making, greater responsibility, and that earn higher wages. The development of standard and achievable career ladders is a critical component of regional workforce planning. Education, industry, and local workforce agencies can utilize this data and report to understand where the opportunities lie to develop meaningful employment and career development in the allied health field.

Objective and Approach

Achieving a culturally competent healthcare workforce is a major focus area for The California Endowment. Part of any strategy to impact this goal should include the large number of healthcare workers often referred to as the *allied health workforce*. This group is comprised of professionals who provide a range of diagnostic, technical, therapeutic, and direct patient care services, as well as support services. The field of allied health ranges from entry-level occupations requiring minimal educational investment to highly specialized occupations requiring advanced-degree training for entry into practice.

This report is one in a series of reports focused on each of The California Endowment's programmatic regions and presents analysis of the racial/ethnic profile for three principal groups in the Bay Area Region (6 counties): the general population, the current health professions workforce, and the graduates of 22 selected allied health education programs. These occupations were selected based on several criteria, including that workers in these occupations often serve as the initial contact, and sometimes as the only contact, in the healthcare system for poor, underserved, or special needs communities. Many of these occupations are also projected to offer substantial job opportunity. They are either fast-growing occupations, or occupations with such a large workforce that even though relative growth may be slow, job openings will be numerous. They may be occupations with both of these characteristics. These occupations present job opportunities with a broad spectrum of education requirements for entry into practice, ranging from certificates requiring less than one year to complete to master's level training.

This report begins with an examination of selected demographic and economic characteristics of the current and projected population in the Bay Area Region, which serves as context for looking at the current workforce and educational pipeline. This is followed by a brief section that describes characteristics of the region's current health professions workforce. It is important to note that analysis of individual occupations in individual counties is not possible because of data limitations. As a result, this section presents data describing broader groups of occupations in the entire region. The remainder of the report is a description and analysis of labor market and education data for 22 selected occupations and education programs, which can all be considered representative of the allied health workforce. They include occupations in healthcare support, in community and social services, and programs for healthcare practitioners and healthcare technologists. Although the analysis for this report is multifaceted, a key theme highlighted throughout is the racial/ethnic composition of these basic workforce components: population, current health professions workforce, and the educational pipeline.

Table 1 displays the list of selected occupations and the most common level of educational attainment required for entry into practice.

Table 1.
Occupational Title and Common Educational Attainment

Occupation	Common Educational Attainment
Dental Assistant	Certificate (1–2 years)
Dental Hygienist	Associate's Degree
Medical Assistant	Certificate (1–2 yrs)
Pharmacy Technician	Certificate (1–2 yrs)
Home Health Aide	Certificate (<1 yr)
Nursing Assistant/Aide	Certificate (<1 yr)
Licensed Vocational Nurse	Certificate (1–2 yrs)
Nurse Practitioner (Advanced Practice Nurse)	Master's Degree
Physician Assistant	Certificate (2 yrs)/Associate's/Master's Degree (depending on previous education and experience)
Respiratory Therapist	Associate's Degree
Radiologic Technologist	Certificate or Associate's Degree (1–2 yrs)
EMT/Paramedic	Certificate (1–2 yrs)
Clinical Laboratory Scientist	Post-baccalaureate Certificate
Psychiatric Technician	Certificate (1–2 yrs)/Associate's Degree
Mental Health Counselor	Master's/Doctoral Degree
Substance Abuse/Behavioral Disorder Counselor	Certificate (2 yrs)/Associate's/Bachelor's/Master's Degree
Mental Health Social Worker	Master's Degree
Medical/Public Health Social Worker	Master's Degree
Geriatric Social Worker	Bachelor's/Master's Degree
Public/Community Health Educator	Bachelor's/Master's/Doctoral Degree
Community Health Worker	Certificate/On-the-job training
Health Care Interpreter	Certificate/On-the-job training

Data Limitations

Data sources used to describe the various components in this report are generally the best publicly available data. However, each has limitations that impact the level of analysis that can be conducted. First, as noted above, because this analysis is focused on a sub-state geographic region we were not able to estimate characteristics of the current workforce at the level of individual occupations or individual counties. The number of sample observations available in the American Community Survey (ACS) is too small to produce estimates at that level of detail. As a result, occupations needed to be aggregated into larger groups and the geographic unit of analysis is the entire Bay Area Region.

Second, there are cases where only a general relationship between employment data and education program data exists. Occupational employment data describe those working in a specific occupation, while

educational institutions report the number of graduates trained to work in a field but not necessarily at a particular job. In this case, when employment and education data do not directly correspond, we report education data describing programs that are generally associated with the occupation of interest (i.e., those programs that are likely to provide useful training for that occupation). For example, data describing the employment conditions for Medical/ Public Health Social Workers have no direct analogue in the education data. We can only report the profile for graduates of general public health or social work programs. Thus, one should be cautious when interpreting and using these data.

Third, because the data describing employment projections and education program graduates only generally correspond, they cannot be combined to precisely balance the number of jobs for allied health workers (demand) and the number of workers available (supply). For example, the number of reported graduates of Medical Assistant programs in a given year may exceed the projected number of annual job openings for Medical Assistants. However, this finding does not necessarily mean that there is a surplus of potential workers. These graduates may choose to work at a related job or may move to find employment in another region.

Information on whether there is a surplus or a shortage of workers in a particular occupation is best obtained directly from employers, who know the number of vacant positions in their organizations, as well as how easy or difficult it is to fill

open positions.[5] Educators may also have a sense of how easy or difficult it is for their graduates to find employment after graduation. Some educators track the types of jobs and workplace settings in which their new graduates are employed.

It is important to note that labor market data is less extensive for occupations that have a self-employment component, where either workers themselves, or their employer is considered self-employed. Examples of this include mental health professionals in private practice or physicians and dentists with private practices that employ Medical Assistants or Dental Assistants. This becomes an issue particularly for the employment projections, where estimates of the annual

5 For example, see *The 2007 Fresno County Employment Study* produced by the Fresno County Workforce Investment Board available at: http://www.workforce-connection.com/index.cfm

number of job openings due to growth and turnover may be biased downward because of the lack of data from employer surveys used to develop employment projections.

Fourth, for several of the selected occupations, the educational institutions reporting program graduates data represent only a sample of all the training opportunities for that occupation. In such cases, the number of reported graduates (N) in a given year is likely an underestimate of the total number of actual graduates. For certain education programs, student data are either poorly reported or not reported at all. For example, data describing graduates of Home Health Aide programs are unavailable. When this is the case, we cannot report on the demographic profile of graduates. We also remind the reader that occasionally, schools mistakenly report graduates of a program that they do not actually offer. We have made every reasonable effort to verify the existence of a program when student data were reported for it. All education programs that reported data are listed in Appendix E.

Using and Interpreting the Data

Although these data are subject to limitations, there are nevertheless several practical uses for this report. Descriptions of the demographic composition of the current workforce, despite being overly general, illustrate the lack of racial and ethnic diversity among healthcare occupations that involve higher levels of education and pay higher wages. They also suggest that certain subpopulations within the broader population categories may be underrepresented (e.g., Asian subpopulation groups). For example, data from the American Community Survey (ACS) indicate that Cambodians, Hmong, and Laotians are broadly underrepresented among Bay Area Region's healthcare workforce.

The data describing education program graduates indicate how different racial/ethnic groups are potentially distributed as new entrants into the workforce. Estimates of employment and wages describe the wide variation in both workforce size and amount of earnings across allied health occupations. These estimates can be combined with demographic data describing the current workforce and education program graduates, as well as with the employment projections data, in order to highlight broad allied health workforce trends in the region. These findings are intended to be useful in guiding workforce planning and in identifying areas, populations, and programs that could

benefit from support in order to achieve the goal of a culturally competent workforce.

Employment Projections

There are two principal components of employment projections: (1) occupational growth (new jobs), driven largely by population growth and growth in those industries in which such occupations are concentrated, and (2) the need to replace workers (attrition) who leave their jobs for whatever reason (in most cases, a new job or retirement). For many occupations, job openings caused by the need to replace workers are more numerous than job openings due to occupational and industrial growth. In some cases, for occupations concentrated in declining industrial sectors, the need to replace workers is the only source of job openings.

For each selected occupation, we included the following data: the projected, average number of job openings per year for each occupation (including new jobs created and job openings that result from the need to replace workers; the projected annual rate of growth for the selected occupation and the average annual rate of growth for *all occupations* (these rates refer to new job creation); and the projected annual turnover rate for the selected occupation and the average annual turnover rate for all occupations (these rates refer to turnover, or the need to replace workers). As noted above, one of the limits of the employment projections data is that their coverage of occupations that have a self-employment component is less extensive. This may have the effect of understating the annual number of job openings for occupations such as Medical Assistant and Dental Assistant, who frequently work for self-employed physicians and dentists.

Race/Ethnicity Categories

The racial/ethnic categories used in this report are defined for each data source and change depending on which source is being used. In general, the categories include White, African American, Asian, Native American, Native Hawaiian/Pacific Islander, and Latino. The category of Latino ethnicity includes people of any race who self-identify as either Hispanic or Latino. "Other race" is a formal category used by the American Community Survey (ACS); however, almost all of the observations identified as "Other race" are also identified as Hispanic or Latino. In this report, the category functions as a way to represent groups when their numbers of observations in the data are too few to generate meaningful estimates. We remind the reader that both Latino and Asian are very broad categories that obscure the variety of cultural and linguistic backgrounds they represent. The available data do not allow us to disaggregate the category of Latino. However, whenever possible we present detailed data that describes the region's many Asian subpopulations.

In the section describing graduates of education programs, we identify only those students for whom race/ethnicity was reported. Students whose race/ethnicity was unknown or unreported were excluded from the analysis. We also excluded the small number of students who were reported as non-U.S. citizens. However, this caveat does not apply to descriptions of the gender

composition of education program graduates; gender is fully identified in the data.

The elimination of student data when race/ethnicity was not identified means that in those figures describing the racial/ethnic composition of graduates of a specific education program, the number of students being described is lower than the actual total number of graduating students because some proportion has been excluded. Thus, the proportions represented will always sum to 100% because they represent 100% of the students for whom race/ethnicity was reported. However, we do include the total number of graduates reported in these figures, whether or not race/ethnicity was identified. It appears in parentheses underneath the total number used to calculate graduates' racial/ethnic composition. For most education programs, in most years, the proportion of graduates whose race/ethnicity is unknown is roughly 10%.

Table 2 summarizes the different racial and ethnic categories used by the different data sources.

Table 2.
Racial/Ethnic Categories by Data Source

Racial/Ethnic Categories by Data Source
American Community Survey (ACS) White, Asian, African American, Hispanic or Latino, Native American, Native Hawaiian, Other Pacific Islander, Multirace, Some other race
Integrated Postsecondary Education Data System (IPEDS)† White, Asian (includes Native Hawaiian/other Pacific Islander), African American, Native American/Alaskan, Hispanic or Latino
California Department of Finance White, African American, Hispanic or Latino, Asian, Native American, Native Hawaiian/Other Pacific Islander, Multirace

† *IPEDS includes the non-racial/ethnic reporting category of non-U.S. citizen.*

Demographic and Economic Characteristics of the Regional Population

The following figures and tables present data describing the features of the region's current population, as well as projected changes to the region's future population.

Table 3 shows how the general population in the Bay Area Region is distributed across the region's six counties. Two features stand out in this table. First is that more than half of the region's population lives in either Alameda or Santa Clara Counties, and second is the comparatively small proportion of people living in Marin County.

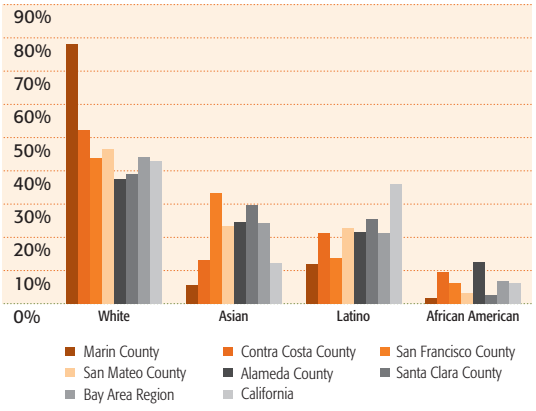
Table 3.
*2006 General Population Totals by County: Bay Area Region**

County	Total Population	Proportion of Regional Population
Marin	248,742	4.2%
Contra Costa	1,024,319	17.3%
Alameda	1,457,426	24.7%
San Francisco	744,041	12.6%
San Mateo	705,499	11.9%
Santa Clara	1,731,281	29.3

**The estimated population for California in 2006 was 36,457,549*

Figures 1 and 2 illustrate how the major racial/ethnic groups are distributed across the general population in each county and how their proportions generally compare with the distribution across California. With the exception of Marin County, the Bay Area Region's general population is racially/ethnically diverse and there are several notable features. In four of the region's six counties, the proportion of Asians is two to three times its size in California as a whole. In all six counties, Latinos represent a smaller share of the total population compared with the proportion of Latinos statewide. African Americans in Alameda and Contra Costa counties represent a substantially greater proportion of the total population in comparison with California as a whole. In all six counties of the region, the multiracial population represents a larger share of the population total compared with the state as a whole. The proportion of Native Hawaiian/Pacific Islanders in San Mateo County is anywhere from two to five times as large as any other county in the region, or in the state.

Figure 1.
2006 White, Asian, African American, and Latino General Population: Bay Area Region by County and California

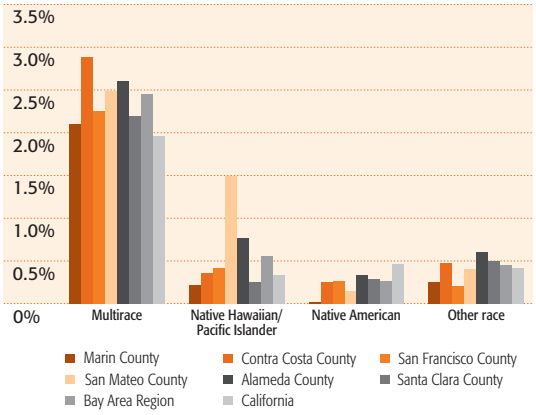


Source: 2006 American Community Survey, PUMS

The broad race category of Asian obscures the fact that there are numerous Asian subpopulations, usually identified by nationality. The American Community

Survey (ACS) identifies more than a dozen such Asian subpopulations. In Table 4, we present data describing how the region's Asian population is distributed across these groups and compare this with the distribution in the state as a whole. However, it is important to recognize that some Asian subpopulations in the region are very small and there were not enough observations in the survey sample to generate estimates of their size. As a result, certain Asian groups were collapsed into an "Other Asian" category.

Figure 2.
2006 Multirace, Native Hawaiian/Pacific Islander, Native American, and Other race General Population: Bay Area Region by County and California*



Source: 2006 American Community Survey, PUMS

**Other race includes anyone who did not identify as a member of one of the major race/ethnicity groups, or chose not to disclose race/ethnicity.*

There are roughly 1.4 million Asians[6] living in the Bay Area Region and overall they represent roughly 24% of the general population. The data that stand out in this table are the comparatively large proportion of the region's Asian population identified as Chinese and as Asian Indian, and by contrast, the comparatively small proportion identified as Korean, Cambodian,

Table 4.
2005/2006 Asian Population by Selected Group: Bay Area Region and California

Selected Asian Group	Bay Area Region	California
Estimated Asian Population	1,397,000	4,480,000
Chinese	37.4%	25.2%
Filipino	21.1%	24.6%
Asian Indian	14.2%	10.6%
Vietnamese	11.5%	11.9%
Japanese	5.2%	6.7%
Korean	4.9%	9.6%
Cambodian	0.7%	1.9%
Laotian	0.6%	1.5%
Thai	0.6%	1.2%
Other Asian*	3.8%	6.8%

Source: Combined 2005 and 2006 American Community Survey PUMS for California

**The "Other Asian" category includes Hmong, Indonesian, Malaysian, Pakistani, Sri Lankan, Bangladeshi, Taiwanese and all other Asian groups not specified.*

Laotian, Thai, and Other Asian. Within the group *Other Asian*, data not shown here suggest that the Hmong population is smaller in the Bay Area Region, relative to its proportional size in California's Asian population. However, as noted, these data are not robust enough to verify this difference as being statistically significant.

Table 5 shows the differences in median age across the different racial/ethnic groups.

The main significance of these data is that they illustrate how much younger the region's Latino population is in comparison to the other main racial/ethnic groups. Sixteen years separates

6 This figure represents individuals identified as Asian alone. It does not include anyone who may be identified as multiracial Asians or Latinos who identify their race as Asian.

Table 5.
2005/2006 Median Age by Race/Ethnicity: Bay Area Region

Race/Ethnicity	Median Age
White	44
Native American	44
African American	39
Asian	37
Native Hawaiian/ Pacific Islander	34
Latino (of any race)	28
Multirace	17

Source: Combined 2005 and 2006 American Community Survey PUMS for California

the median age of the region's White population and Latino population.[7]

Nearly one-third (32%) of the Bay Area Region's general population of roughly 5.9 million people is foreign-born, approximately 75% of whom were born in either Latin America or East Asia.[8] Among those born in Latin America, roughly 75% identify Mexico as their country of birth and among those born in East Asia approximately 70% identify China (26%), the Philippines (26%) or Vietnam (18%) as their country of birth.

Overall, 44% of the Bay Area Region's Latino population and 66% of the Asian population is foreign-born. Because of these large proportions they were selected for analysis of self-reported ability to speak English. These two populations were then stratified to select for only those over the age of 18. Table 6 illustrates the differences between these two populations, in the ability to speak English.

Table 6.
2005/2006 Latino and Asian Populations Over the Age of 18 by Ability to Speak English: Bay Area Region

Self-Reported Ability to Speak English	Latino (%)	Asian (%)
Very Well	40.9	48.4
Well	20.4	26.4
Not Well	24.7	18.1
Not At All	14.0	7.1

Source: 2006 American Community Survey PUMS for California

Limited English speakers represent a much greater share of the region's Latino population over the age of 18 compared with the region's Asian population over the age of 18.

Limited English speakers represent a much greater share of the region's Latino population over the age of 18 compared with the region's Asian population over the age of 18. Within this subpopulation, an estimated 39% of Latinos in the region are reported as speaking English either "not well" or "not at all", compared with roughly 25% of the Asians. Those represented as speaking English either "not well" or "not at all" could be potentially isolated by the inability to communicate in English. This has important implications both for the delivery of healthcare services, participating in the healthcare workforce, and academic success in allied health education programs.

Table 7 reveals several striking differences in the level of educational attainment by comparing racial/ethnic groups within the region's population and then comparing racial/ethnic groups in the region with the state as a whole.

In general, educational attainment in the population is above average in the Bay Area Region in comparison to California as a whole. Within the region, the general racial/ ethnic group differences in educational

7 Data not shown here also indicate that there is also a wide range in the median age of the region's different Asian subpopulations. The Laotian, Cambodian, and Asian Indian populations are youngest, with a median age around 30 years old. By comparison, the median age of the region's Japanese population is 45 years old. See Appendix B: 2005/2006 Median Age by Selected Asian Group: Bay Area Region.

8 Appendix C lists the countries represented by these two broad geographic regions.

Table 7.
2005/2006 Educational Attainment of Population Ages 25 and Over by Race/Ethnicity: Bay Area Region and California

Group	Associate's Degree or Higher		Baccalaureate Degree or Higher		Master's Degree or Higher	
	Bay Area Region (%)	California (%)	Bay Area Region (%)	California (%)	Bay Area Region (%)	California (%)
General Population	40.4	37.3	35.1	29.6	16.2	10.6
White	60.2	46.8	52.8	37.9	22.4	14.5
Asian	58.9	56.0	51.6	47.7	19.5	15.5
African American	33.2	33.2	22.1	22.4	8.1	7.8
Latino	20.4	14.6	15.4	9.6	4.7	2.8

Source: Combined 2005 and 2006 American Community Survey PUMS for California

attainment also tend to mirror those found at the state level with one important difference. Levels of educational attainment are still highest among Asians and Whites (compared to other racial/ethnic groups), but in the Bay Area it is Whites who are most highly educated; in California it is Asians. Latinos represent the least educated group, whether at the regional or state level. The number of sample observations describing the region's Native Hawaiian/Pacific Islander and Native American populations was too small to generate estimates across the full range of educational attainment.

Table 8 presents estimates of the median annual wage[9] for each of the different counties in the region expressed in 2006 inflation-adjusted dollars. These data show that the median annual wage is highest in Marin County and lowest in Alameda County.

Table 8.
Median Annual Wage by County (2006 Inflation-adjusted Dollars): Bay Area Region

Race/Ethnicity	Median Annual Wage (2006 $)
Marin	$53,486
Santa Clara	$49,739
San Mateo	$48,000
Contra Costa	$46,721
San Francisco	$45,705
Alameda	$44,211

Source: Combined 2005 and 2006 American Community Survey PUMS for California

Table 9.
Median Annual Wage by Race/Ethnicity[10] (2006 Inflation-Adjusted Dollars): Bay Area Region

Race/Ethnicity	Median Annual Wage (2006 $)
White	$58,490
Asian	$48,755
Native American	$40,622
African American	$39,790
Native Hawaiian/	$36,317
Latino	$30,000

Source: Combined 2005 and 2006 American Community Survey PUMS for California

9 We imposed certain conditions on the sample in order to generate these estimates. First, we limited the sample of workers to those who reported working at least 26 weeks and at least 20 hours per week in the previous year. Then we calculated an hourly wage that controlled for differences in weekly hours worked and the number of weeks worked. Finally, we multiplied the hourly wage by 2080 hours to obtain an annual FTE equivalent wage.

10 An estimate of median annual wage for the Bay Area Region's multiracial population is not included in the table. This is because it is so much younger by comparison with other racial/ethnic groups and as a result it was underrepresented in the sample, given our threshold criteria for inclusion.

Table 9 presents estimates of the median annual wage for each of the different racial/ethnic groups expressed in 2006 inflation-adjusted dollars.

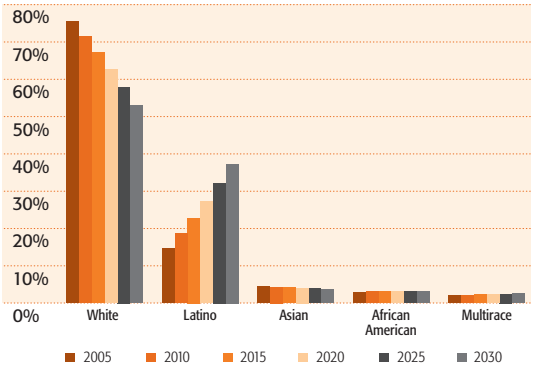
These data correlate with other data presented in this section. The region's Latino population is younger, less well-educated, more likely to be linguistically isolated as limited English speakers, and have the lowest median wages in the region. Half of all Latinos in the sample earned $30,000 per year or less; this is roughly $28,000 less than the median annual wage for the region's White population.[11]

Regional Population Projections

The Bay Area Region's population is projected to grow by roughly 1.25 million people between 2005 and 2030. Most of this growth is projected to occur in three counties: Santa Clara County (34% of total projected growth), Contra Costa County (31% of total projected growth), and Alameda County (23% of total projected growth). These three counties rank 9th, 11th, and 14th in terms of projected, absolute population growth during this period among all counties in California.[12] However, none of the counties in the Bay Area Region are projected to grow rapidly; in fact San Mateo, San Francisco, and Marin counties rank 55th, 56th, and 57th among all counties in the state for relative population growth projected to occur between 2005 and 2030. Projected population growth in the Bay Area Region is also concentrated in two racial/ethnic groups: Latino (58% of total projected growth) and Asian (30% of total projected growth). In contrast, the region's White population is projected to decline in number and proportional representation in all but San Francisco County over the next two decades. The same caveat regarding the homogenous quality of the data reporting categories of Latino and Asian is once again applicable here. It may be that specific groups within the wider Latino and Asian populations disproportionately represent the source of population growth. These data alone cannot be used to determine whether this is the case.

Figures 3 through 8 depict the projected changes in population by race/ethnicity between 2005 and 2030 for each county in the Bay Area Region.

Figure 3.
2005–2030 Projected Population by Race/Ethnicity: Marin County



Source: California Department of Finance, Demographic Research Unit

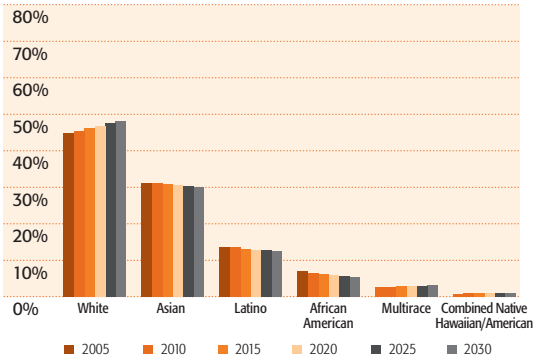
The Latino population is the only group projected to experience any substantial growth in Marin County over the next two decades. In contrast, the county's White population is projected to decline by roughly 25% (though expected to remain a majority).

11 $22,000 per year was just slightly more than the 2006 federal poverty threshold for a family of four. See 2006 federal poverty guidelines at http://aspe.hhs.gov/POVERTY/06poverty.shtml

12 Analysis of CA Department of Finance, Demographic Research Unit, *Population Projections 2000-2050* (July 2007).

Marin County's Asian population is also expected to shrink slightly, resulting in a small proportional decline. The county's multiracial population is expected to grow slightly, also resulting in a small proportional gain. Native Hawaiians/ Pacific Islanders (0.24%) and Native Americans (0.16%) collectively represent approximately 0.4% of Marin County's population and this not projected to change in the future. They are not shown in figure 3.

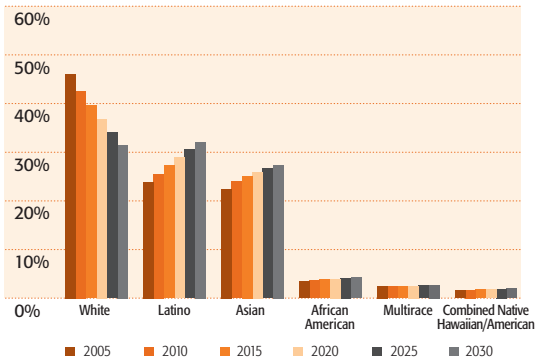
Figure 4.
2005–2030 Projected Population by Race/Ethnicity: San Francisco County



Source: California Department of Finance, Demographic Research Unit

San Francisco County is unique in that it is the only county in the region where the White population is expected to grow and the Latino population is expected to decline over the next two decades. Collectively, the county's Native Hawaiian (0.5%) and Native American (0.3%) populations currently represent 0.8% of the total population. By 2030, these population groups are each projected to grow by roughly 0.1%, bringing their collective total to 1.0% of San Francisco County's general population.

Figure 5.
2005–2030 Projected Population by Race/Ethnicity: San Mateo County



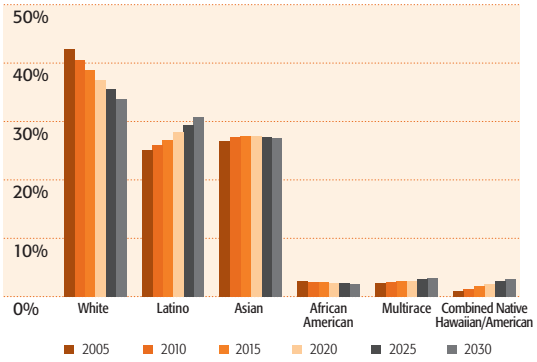
Source: California Department of Finance, Demographic Research Unit

Overall, the population in San Mateo County is not projected to grow much between 2005 and 2030. However, almost all of the population growth is expected to result from growth in the county's Latino and Asian populations. Projections also indicate slight growth in the region's African American population. Collectively, the county's Native Hawaiian/Pacific Islander (1.4%) and Native American (0.2%) populations currently represent 1.6% of the total population. By 2030, slight growth in the county's Native Hawaiian/Pacific Islander is projected to increase their collective total to roughly 2.0% of San Mateo County's general population.

Among all counties in the region, Santa Clara County is projected to experience the greatest absolute change in population size over the next two decades. Over half of this projected growth is expected to result from growth in the county's Latino population and another one-quarter of the projected growth is expected to result from growth in the county's Asian population. Collectively, the county's Native Hawaiian/

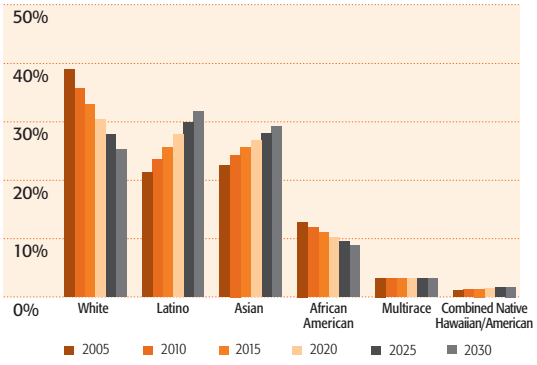
Pacific Islander (0.5%) and Native American (0.3%) populations currently represent 0.8% of the total population. By 2030, rapid growth in the county's Native Hawaiian/Pacific Islander is projected to increase their collective total to roughly 3.0% of Santa Clara County's general population.

Figure 6.
2005–2030 Projected Population by Race/Ethnicity: Santa Clara County



Source: California Department of Finance, Demographic Research Unit

Figure 7.
2005–2030 Projected Population by Race/Ethnicity: Alameda County

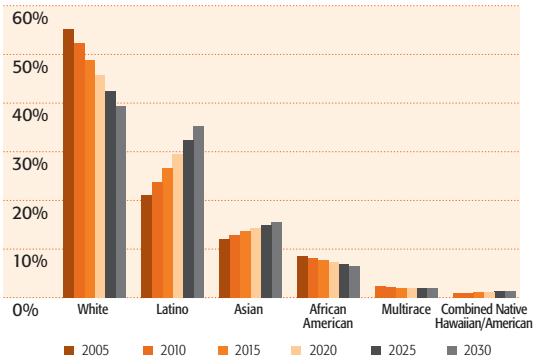


Source: California Department of Finance, Demographic Research Unit

As noted earlier in the report, Alameda County is the most racially/ethnically diverse county in the Bay Area Region, if not in California. Strong population growth is projected for the county's Latino and Asian populations. Both the White and African American populations in the county are projected to decline in size and proportional representation. Collectively, the county's Native Hawaiian/Pacific Islander (0.7%) and Native American (0.4%) populations currently represent 1.1% of the total population. By 2030, these population groups are each projected to grow by roughly 0.3%, bringing their collective total to 1.7% of Alameda County's general population.

Among all the counties in the region, Santa Clara County is projected to experience the greatest absolute change in population size over the next two decades.

Figure 8.
2005–2030 Projected Population by Race/Ethnicity: Contra Costa County



Source: California Department of Finance, Demographic Research Unit

Contra Costa is the fastest-growing county in the Bay Area Region. The projected changes to its population's racial/ethnic composition mirror those expected to happen to most of the region. The Latino population is growing rapidly, and by 2030 is projected to represent a substantially greater share of the county's total population. The county's Asian population is also growing, but not nearly as rapidly by comparison. As is true in other counties in the region, both the White population and the African American population in Contra Costa County are projected to decline

Women represent anywhere from 70% to 85% of the workforce.

over the next two decades. Collectively, the county's Native Hawaiian/Pacific Islander (0.4%) and Native American (0.4%) populations currently represent 0.8% of the total population. Slight growth of the county's Native Hawaiian/Pacific Islander population is projected to increase their collective total to 1.4% of Contra Costa County's general population by 2030.

The other major population phenomenon expected to occur over the next two decades is the aging of the population. The number of Californian's over the age of 65 is projected to increase significantly during this period, and to some degree all of the counties in the Bay Area Region will experience this demographic shift. In total, the size of the region's population over the age of 65 is projected to more than double from roughly 700,000 in 2005 to 1.5 million in 2030.

One of the concerns over this demographic shift is how this growth, when combined with growth of the very youngest segments of the population, will impact the workforce. The relationship between the economically dependent population (under age 16 and over age 65) and the economically productive population (ages 16-65) has important social and economic implications. A growing dependency ratio would be expected to tax systems and infrastructure financed by economic productivity, including social and public health systems. It may also change the mix and type of human resources needed to care for the dependent population, including the need for allied health workers to provide services in acute and long-term care settings and in the home. In the Bay Area Region, Marin County is projected to have a dependency ratio approaching 1-to-1 by the year 2030. With the exception of San Francisco County (where growth in the population over the age of 65 is projected to be minimal), all other counties are projected to have dependency ratios around 1-to-1.5 by 2030, which is the statewide average.

The Composition of the Current Regional Health Professions Workforce

Because this analysis is focused on a sub-state geographic region, we were not able to generate estimates at either the level of individual occupations or at the geographical level of individual counties due to the small number of sample observations in the survey data. Our best option was to describe the regional health professions workforce (all counties aggregated together) and to use broader occupational groupings derived from the Standard Occupation Code (SOC) classification system. All of the occupations selected for analysis are represented by one of several broad groups.[13]

- Health Diagnosing and Treating Practitioners (SOC 29-1000)
- Health Technologists and Technicians (SOC 29-2000)
- Healthcare Support Occupations (SOC 31-0000)

13 These broad groups also include other healthcare occupations outside the scope of this analysis. For a list of all occupations represented by these groups see Appendix A: Detailed Listing of Occupations Used in This Report by Standard Occupation Classification.

- Community and Social Service Counselors, Social Workers, and Community/Social Service Specialists (SOC 21-1000)[14]

Occupations included in *Health Diagnosing and Treating Practitioners* are those that generally require the highest levels of education and are the highest paid in health care. Occupations selected for analysis in this report that are represented by this broad occupational group are **Registered Nurse Practitioners**, **Physician Assistants**, and **Respiratory Therapists**.

Selected allied health occupations represented by the broad group *Health Technologists and Technicians* include **Dental Hygienists**, **Clinical Laboratory Scientists and Technicians**, **Radiologic Technologists and Technicians**, **Emergency Medical Technicians and Paramedics**, **Pharmacy Technicians**, **Psychiatric Technicians**, and **Licensed Vocational Nurses**. These occupations typically require an associate's degree for a worker's entry into practice. Although workers in some of these occupations earn high wages, when the broad group is considered as a

Table 10.
2005/2006 Regional Health Professions Workforce by Occupational Group, by Gender and by Race/Ethnicity: Bay Area Region

Occupational Group	Educational Attainment (Degree Held)	Proportion of Occupational Group (%)	Gender		Race/Ethnicity				
			M	F	White (%)	Asian (%)	African American (%)	Latino (%)	Other* (%)
Counselors/ Social Workers/ Community and Social Service Specialists	Master's or higher	52.5	26.2	73.8	67.6	8.5	9.7	12.0	2.2
	Below Master's	47.5	34.3	65.7	36.6	15.2	23.0	21.3	3.9
Diagnosing and Treating Practitioners (SOC 29-1000)	Master's or higher	48.6	43.7	56.3	64.1	28.2	2.3	3.7	1.7
	Below Master's	51.4	15.1	84.9	47.5	34.8	8.7	7.0	2.0
Healthcare Technologists and Technicians (SOC 29-2000)	Associate's or higher	44.5	27.9	72.1	44.3	40.3	4.6	8.4	2.4
	Below Associate's	55.3	31.1	68.9	44.7	20.9	15.7	14.0	4.7
Healthcare Support Occupations (SOC 31-1000)	Associate's or higher	32.8	20.1	79.4	33.2	44.2	7.6	11.8	3.2
	Below Associate's	67.2	13.9	86.1	26.5	26.0	16.4	25.3	5.8
Regional Labor Force[15]	—	—	**50.6**	**49.4**	**45.1**	**25.2**	**6.4**	**20.2**	**3.1**

**Includes Native American, Native Hawaiian/Pacific Islander and Other race (not Latino).*
Source: Combined 2005 and 2006 American Community Survey PUMS for California

14 Sample observations of this broad occupational group were cross tabulated with industry codes to select only those counselors, social workers, and social service specialists identified as working in healthcare-related industries.

15 The region's population between the ages of 18 and 65 is used to proxy the actual labor force.

whole, these workers are less well paid than diagnosing and treating practitioners.

Healthcare Support Occupations are entry-level healthcare positions at the low end of the wage scale and typically require less than a year of formal training (or only require on-the-job training). Occupations represented by this broad group that were selected for analysis in this report include **Nursing Assistants/Aides**, **Home Health Aides**, **Dental Assistants**, and **Medical Assistants**.

Counselors, Social Workers, and Community and Social Service Specialists include the following occupations selected for analysis in this report: **Substance Abuse and Behavioral Disorder Counselors**, **Mental Health Counselors**, **Medical and Public Health Social Workers**, **Mental Health and Substance Abuse Social Workers**, and **Public/Community Health Educators**.

In Table 10, the composition by gender, race/ethnicity and by educational attainment for these four broad occupational groups is shown for the Bay Area Region.

Several characteristics of the health professions workforce in the Bay Area Region are worth noting. First, with the exception of *Diagnosing and Treating Practitioners* trained at the master's degree level or higher, women predominate. They are slightly less well represented among *Counselors, Social Workers, and Community and Social Service Specialists* with lower levels of education, and among *Health Technologists and Technicians*. But in all other segments of the health professions workforce and at all education levels, women represent anywhere from 70% to 85% of the workforce.

The racial/ethnic composition of the region's health professions workforce also shows differences by occupational group and by level of educational attainment. The least racially/ethnically diverse group of occupations is *Diagnosing and Treating Practitioners* trained at the master's degree level or higher. White (64%) and Asian (28%) professionals collectively represent over 90% of this segment of the workforce, which includes most of the highest paid healthcare professions. The most racially/ethnically diverse group of occupations is *Healthcare Support Occupations* trained below the level of an associate's degree.

Table 11.
2005/2006 Distribution of Health Professions Workforce by Occupational Group and by Race/Ethnicity: Bay Area Region

Occupational Group	White (%)	Asian (%)	African American (%)	Latino (%)
Counselors/Social Workers/ Community and Social Service Specialists (SOC 21-1000)	12.3	4.6	19.9	16.5
Diagnosing and Treating Practitioners (SOC 29-1000)	57.1	50.1	27.4	22.2
Healthcare Technologists and Technicians (SOC 29-2000)	14.9	16.9	15.6	14.9
Healthcare Support Occupations (SOC 31-1000)	15.6	27.7	36.7	46.4

Source: Combined 2005 and 2006 American Community Survey PUMS for California

Table 12.
2005/2006 Regional Health Professions Workforce by Race/Ethnicity and by Educational Attainment: Bay Area Region

Educational Attainment	All Healthcare Professionals (%)	White (%)	Asian (%)	African American (%)	Latino (%)
High School	13.4	7.0	10.8	30.9	28.2
Under 1yr College (no degree)	4.1	3.4	2.8	6.6	7.5
1 – 2yrs College (no degree)	11.2	9.2	8.5	19.1	18.9
Associate's Degree	12.4	12.0	12.9	16.4	10.7
Bachelor's Degree	26.9	24.8	37.5	14.3	19.6
Master's Degree	12.7	19.1	6.5	8.1	7.2
Professional Degree	16.2	21.2	16.4	3.9	6.9
Doctoral Degree (PhD)	3.1	3.3	4.6	0.7	1.0

Source: Combined 2005 and 2006 American Community Survey PUMS for California

This group includes the lowest paid occupations in health care.

Table 11 shows how health care workers from each racial/ethnic group are distributed across each broad occupational group.

The data in this table are another way to show how healthcare workers within specific racial/ethnic groups are disproportionately represented in different broad occupational groups. They help clarify the picture of racial/ethnic representation seen in Table 10. In that table, Latinos and African Americans are well represented in two broad healthcare occupation groups: *Counselors, Social Workers, and Community and Social Service Specialists* and *Healthcare Support Occupations*. Table 11 shows that Latino and African American health care workers are largely employed in entry-level healthcare support occupations. In contrast, White (57%) and Asian (50%) healthcare workers largely work as diagnosing and treating practitioners, which are typically the most highly educated, highly paid healthcare professionals.

Table 12 illustrates the differences in educational attainment among healthcare workers[16] in the region from the four largest racial/ethnic groups, regardless of occupation.[17]

These data reinforce the pattern seen in previous tables. Asian and White healthcare workers are better educated in comparison to other racial/ethnic groups. Both groups have substantially greater levels of educational attainment in comparison to Latino and African American healthcare workers. The number of sample observations was too small to generate estimates of the educational attainment profile for Native Hawaiian/Pacific Islander or Native American healthcare professionals.

16 It is possible that there are healthcare workers who are not identified in the survey data by one of the Standard Occupational Classification (SOC) codes used in our analysis.

17 We omitted estimates for Native American, Native Hawaiian/Pacific Islander, and Multirace healthcare workers because of the small number of sample observations. However, healthcare professionals from these racial/ethnic groups are included in the "All Health Professionals" category (the first column of Table 13).

Table 13 shows 2006 median income data by race/ethnicity for regional healthcare workers, regardless of occupation, among the four largest racial/ethnic groups.

Again, these data complement the picture portrayed by the previous tables in this section. White healthcare workers earn substantially more in comparison to other racial/ethnic groups. However, the real earnings gap is between White and Asian healthcare workers, and Latino or African American healthcare workers in the region. This is not surprising given the predominance of White and Asian healthcare workers in those segments of the region's health professions workforce that include high wage occupations.

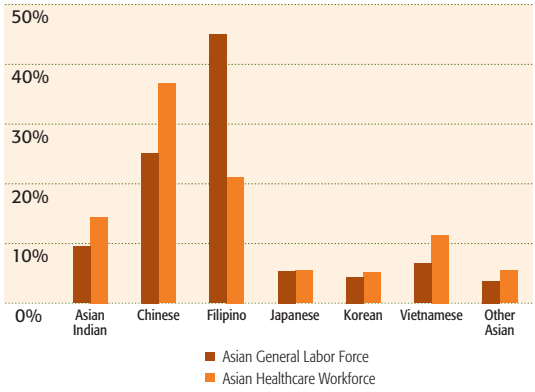
As a race category, "Asian" is very broad. As noted in the previous section describing the Bay Area Region's general population, there are many subpopulations within this larger category. Figure 9 compares the distribution of Asian healthcare workers, regardless of occupation, with the distribution of the Asian general labor force[19] in the region, by selected Asian subpopulation.

Table 13.
Median Annual Income by Race/Ethnicity for Regional Health Professions Workforce (2006 Inflation-adjusted Dollars): Bay Area Region[18]

Selected Health Professionals by Race/Ethnicity	Median Wage (2006 $)
White	$69,971
Asian	$58,510
African American	$40,997
Latino	$39,998

Source: Combined 2005 and 2006 American Community Survey PUMS for California

Figure 9.
2005/2006 Distribution of the Asian General Labor Force vs. Asian Healthcare Workforce by Selected Asian Groups: Bay Area Region



Source: Combined 2005 and 2006 American Community Survey PUMS for California

**Other Asian category combines Hmong, Laotian, Cambodian, Thai, Indonesian, Malaysian, Pakistani, Sri Lankan, Bangladeshi, Taiwanese, and all other Asian groups not specified.*

Roughly 45% of the Asian healthcare workforce in the Bay Area Region is identified as Filipino, whereas Filipinos represent just over 20% of the region's Asian general labor force. In contrast, the region's Chinese population represents approximately 37% of the Asian labor force, but just 25% of Asian healthcare workers. The region's

Table 14.
2005/2006 Foreign-born Asians and Latinos in the Bay Area Region: General Labor Force vs. Healthcare Workforce

Foreign-born Proportion of Selected Population			
Asian		Latino	
General Labor Force (%)	Healthcare Workforce (%)	General Labor Force (%)	Healthcare Workforce (%)
79.2	78.9	60.1	41.9

Source: Combined 2005 and 2006 American Community Survey PUMS for California

18 We imposed certain conditions on the sample in order to generate these estimates. First, we limited the sample of workers to those who reported working at least 30 weeks and at least 20 hours per week in the previous year. Then we calculated an adjusted hourly wage that controlled for differences in weekly hours worked and the number of weeks worked. Finally, we multiplied the hourly wage by 2080 hours to obtain an annual FTE equivalent wage.

19 Again, we use the region's population between the ages of 18 and 65 (inclusive) to proxy the general labor force.

Asian Indian and Vietnamese populations also appear to be underrepresented in the health professions. Within the group *Other Asian*, data not shown here suggest that Laotians are not well represented among the region's health professions workforce, nor are Pakistanis. However, these data are not robust enough to verify this difference as being statistically significant. Overall, these data suggest that workforce recruitment and training programs could be targeted toward certain Asian subgroups in order to increase their representation in the region's healthcare workforce.

As noted in the previous section, large proportions of the Bay Area Region's Asian and Latino populations are foreign-born. Table 14 compares the proportion of foreign-born Asians and Latinos in the general labor force versus the health professions workforce.

The proportion of the Asian general labor force and the proportion of Asian healthcare workers in the Bay Area Region are identical: roughly 79% of each is foreign-born. This is not the case for the region's Latino population. There is a roughly 20% difference between the proportion of region's Latino general labor force that is foreign-born and the proportion of the region's Latino healthcare workers that are foreign-born.

Note that the categories of Latino and Asian are very broad and they obscure a variety of different subpopulations. In the measures we used to analyze the region's current health professions workforce, it may be that certain Latino or Asian subpopulations are disproportionately represented. For example, it may be that specific Asian groups are overrepresented in the very highest-paying

healthcare occupations, while others are overrepresented in the very lowest-paying healthcare occupations. Or it may be that certain groups within the broader Latino population that work in the region's health professions labor force are less well educated than are others. Unfortunately, the level of detail that we are able to present in our analysis is limited by the available data.

Overall, these data suggest that workforce recruitment and training programs could be targeted toward certain Asian subgroups in order to increase representation in the region's healthcare workforce.

Labor Market and Education Data for Selected Allied Health Occupations

The tables and figures in this section present data describing current employment, employment-to-population ratios, wages, and projected occupational growth for the selected allied health professions, as well as data describing the racial/ethnic composition of recent graduates of the selected allied health education programs. The labor market data is presented in as much geographic detail as possible: the metropolitan statistical area (MSA).[20] In the Bay Area Region there are three MSAs, which encompass the six individual counties and they are designated as follows: Oakland-Fremont-Hayward (Alameda and Contra Costa counties); San Jose-Sunnyvale-Santa Clara (Santa Clara and San Benito counties);[21] San Francisco-San Mateo-Redwood City (Marin, San Francisco and San Mateo counties). For certain occupations, current estimates of employment (and therefore employment per population ratios) were not available. In the tables that follow, we use the symbol "—" to denote missing data.

There is an important caveat with respect to the employment projections data. At the time of writing, we used the most current data available (projections for the years 2004-2014). However, these county-level data are currently under revision and at some point in the near future all available data will refer to the period 2006-2016. As the Labor Market Information Division of the California Employment Development Department releases updated estimates, the employment outlook for many or all the occupations analyzed in this report may shift. Nevertheless, these data may be useful in regional workforce planning in that they indicate areas of growth and the occupations likely to offer the greatest number of jobs in the selected allied health occupations.

As we noted earlier in this report, there is a difference between job creation, or job growth, and the need to replace workers (or job turnover). In this section, for each selected occupation, we included the following employment projections data: the projected, average number of job openings per year for each occupation (including *new* jobs created and job openings that result from the need to replace workers; the projected annual rate of growth for the selected occupation and the average annual rate of growth for all occupations (these rates refer to *new* job creation); and the projected annual turnover rate for the selected occupation and the average annual turnover rate for all occupations (these rates refer to turnover, or the need to replace workers). As noted above, one of the limits of the employment projections data is that their coverage of occupations that have a self-employment component is less extensive. This may have the effect of understating the annual number of job openings for occupations such as Medical Assistant and Dental Assistant, who frequently work for self-employed physicians and dentists.

In the figures describing the racial/ethnic composition of graduates of selected

20 These data come from the California Employment Development Department, Labor Market Information Division and are released to the public already aggregated.

21 San Benito County is actually part of the TCE-designated Fresno region. However, because of the way in which these labor market data are aggregated, we cannot avoid including San Benito County in this report. For more information see: http://www.labormarketinfo.edd.ca.gov/?PAGEID=94

education programs, the proportional totals displayed represent graduates for whom race/ethnicity was reported. Graduates for whom race/ethnicity was not identified were excluded from these calculations. However, these figures do include both the total number of graduates who are identified by race/ethnicity and the total number of reported graduates (including those not identified by race/ethnicity). The convention we employed was to use (N) to denote "identified totals" and in parentheses underneath (N) is the "total reported". For example, in **Figure 10. 2005–2007 Racial/Ethnic Composition for Reported Graduates of Dental Assistant Programs: Bay Area Region**, in 2005 there were 610 total graduates reported by programs in the region and for 514 of these graduates race/ethnicity was reported.

DENTAL ASSISTANT AND DENTAL HYGIENIST

Description: Dental Assistant

Registered Dental Assistants (RDA) are licensed in California by the Committee on Dental Auxiliaries. However, dental assistants may also work as unlicensed professionals. By law, unlicensed Dental Assistants perform only the most basic tasks to support a dentist. Their scope of practice includes preparing patients for treatment, obtaining patient dental records, sterilizing and disinfecting instruments and equipment, preparing trays of instruments, and performing a limited number of technical procedures.

By contrast, licensed Registered Dental Assistants (RDA) have a considerably

Table 15.
2007 Dental Assistant Estimated Employment and Employment per Population, and 2008 Median Annual Wage by County

County	Current Employment Estimates		
	Employment	Employment per 100,000 Population	Median Annual Wage
Alameda/Contra Costa	3260	127	$40,248
Marin/San Francisco/San Mateo	2350	130	$39,686
Santa Clara	3100	170	$40,560

Source: California Employment Development Department, Labor Market Information Division

Table 16.
2004-2014 Dental Assistant Employment Projections by County

County	Projected Employment Estimates				
	Openings/ Year	Annual Growth Rate		Annual Turnover Rate	
		Dent Asst	Average	Dent Asst	Average
Alameda/Contra Costa	132	1.1%	0.9%	2.8%	2.3%
Marin/San Francisco/San Mateo	92	1.0%	0.8%		
Santa Clara	146	2.2%	1.0%		

Source: California Employment Development Department, Labor Market Information Division

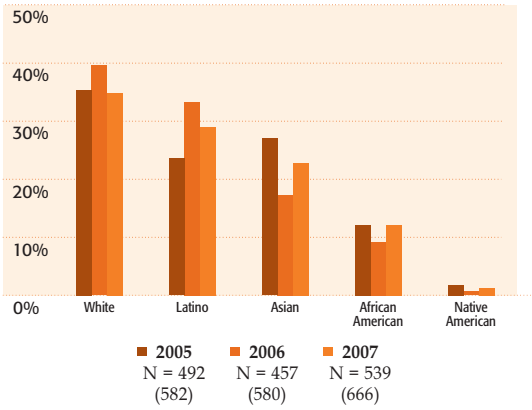
The biggest individual programs are private for-profit institutions which collectively produce roughly 60% of all graduates.

wider scope of practice that involves performing many more technical procedures. In fact, there is a fair amount of overlap between the Registered Dental Assistant (RDA) scope of practice and the Registered Dental Hygienist (RDH) scope of practice. The key difference is that for those procedures that Registered Dental Assistants and Registered Dental Hygienists share in common, state regulations require that a supervising dentist be physically present when the Dental Assistant performs them. The Registered Dental Hygienist would be allowed to perform the same procedure without a dentist being physically present.[22]

Employment, Wage, and Education Data: Dental Assistant

See Tables 15 and 16

Figure 10.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Dental Assistant Programs: Bay Area Region



Source: Integrated Postsecondary Education Data System (IPEDS)

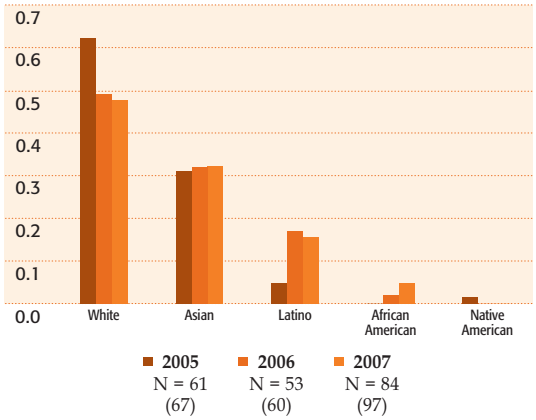
Description: Dental Hygienist

Registered Dental Hygienists (RDH) are licensed in California by the Committee on Dental Auxiliaries. The RDH scope of practice includes removing soft and hard deposits from teeth, teaching patients how to practice good oral hygiene, and providing other preventive dental care. Hygienists examine patients' teeth and gums and record the presence of diseases or abnormalities. They remove calculus, stains, and plaque from teeth; perform root planning as a periodontal therapy; take and develop dental x-rays; and apply cavity-preventive agents, such as fluorides and pit and fissure sealants. With additional training, and under the direct supervision of a dentist, Registered Dental Hygienists in California can deliver local anesthesia, as well as nitrous oxide and oxygen.

Employment, Wage, and Education Data: Dental Hygienist

See Tables 17 and 18

Figure 11.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Dental Hygienist Programs: Bay Area Region



Source: Integrated Postsecondary Education Data System (IPEDS)

22 A table listing allowable duties by type of dental auxiliary is available on the COMDA website at http://www.comda.ca.gov/index.html

Summary of Employment, Wage, and Education Data: Dental Assistant and Dental Hygienist

The labor market data show that the median wage for Dental Assistants is consistent across the region. However, they also indicate that employment per population is much higher in Santa Clara County. The employment outlook indicates average growth projected for Marin/San Francisco/San Mateo counties, but in Santa Clara County, the projected growth rate is twice as fast as the average. Across the region, the need to replace workers will account for more job openings than industry growth. However, because the Dental Assistant workforce is relatively large, the combination of growth and replacement needs should result in a significant number of job openings.

Employment conditions for Dental Hygienists show striking regional variation. The estimated median wage is considerably higher ($40-$45,000/year higher) in Marin/San Francisco/San Mateo and Alameda/Contra Costa counties in comparison to Santa Clara County. In addition to a much lower median wage, the employment to population ratio in Santa Clara is comparatively lower. The employment outlook for Dental Hygienists is mixed: below average growth projected for Marin/San Francisco/San Mateo counties; slightly above average growth projected for Alameda/Contra Costa counties; a projected growth rate twice the average rate in Santa Clara County. Most of the employment opportunity for Dental Hygienists will come from industry growth, as opposed to the need to replace

Table 17.
2007 Dental Hygienist Estimated Employment and Employment per Population, and 2008 Median Annual Wage by County

County	Current Employment Estimates		
	Employment	Employment per 100,000 Population	Median Annual Wage
Alameda/Contra Costa	1930	75	$100,859
Marin/San Francisco/San Mateo	1190	66	$109,366
Santa Clara	980	54	$64,000

Source: California Employment Development Department, Labor Market Information Division

Table 18.
2004-2014 Dental Hygienist Employment Projections by County

County	Projected Employment Estimates				
	Openings/ Year	Annual Growth Rate		Annual Turnover Rate	
		RDH	Average	RDH	Average
Alameda/Contra Costa	48	1.2%	0.9%	2.8%	2.3%
Marin/San Francisco/San Mateo	20	0.6%	0.8%		
Santa Clara	31	2.4%	1.0%		

Source: California Employment Development Department, Labor Market Information Division

workers. These projections indicate that the turnover rate for Dental Hygienists is well below average for the region.

We remind the reader that the coverage of these labor market data is less extensive for occupations that have a self-employment component, where either workers themselves, or their employer is considered self-employed. This is particularly an issue with respect to employment projections. The less extensive coverage may have the effect of understating the annual number of job openings for Dental Assistants and Dental Hygienists, who frequently work for self-employed dentists.

In terms of educational opportunity, the Committee on Dental Auxiliaries lists 17 different "approved" Registered Dental Assistant programs[23] in the Bay Area Region, 16 of which are identified in the data reported here. The data indicate growth in total output, and in 2007 these programs produced 600-650 new graduates. Well over 90% of Dental Assistant graduates are women, though they are also racially/ethnically diverse. White students form the largest racial/ethnic group (roughly 35% of the total), but Latino, Asian, African American and Native American students are all well represented.[24] The biggest individual programs (in terms of the total number of graduates) are private for-profit institutions, which collectively produce roughly 60% of all graduates. However, private for-profit institutions also represent 45% of the programs reporting student data. Nonetheless, the strong presence of private schools raises questions about the overall cost of training and student indebtedness.

There are currently four Dental Hygiene programs in the Bay Area Region; although the baccalaureate program at the University of California, San Francisco closed at the end of the 2005 academic year, a new program at Western Career College-Pleasant Hill graduated its inaugural class in the spring of 2007. Because enrollment in UCSF's program had been declining for several years, in the wake of its decision to close, the opening of a new program had the effect of dramatically increasing the number of Dental Hygiene graduates between 2005 and 2007, from around 65 to nearly 100.

The gender composition of the region's Dental Hygiene programs is homogenous: Roughly 95% of graduates are women. The racial/ethnic profile of graduates is more diverse. Although White students form a near-majority of the total number of graduates, their presence has actually declined over time. In contrast, the presence of Latino students has grown (from roughly 5% of the total in 2005 to more than 15% in 2006 and 2007). African American and Native American students are almost entirely missing from the region's Dental Hygiene programs. In 2007, the four programs reported just four African American graduates and not a single Native American graduate.

MEDICAL ASSISTANT

Description: Medical Assistant

The Medical Assistant is an unlicensed occupation. Medical Assistants perform a variety of administrative and clinical tasks to keep the offices of physicians, podiatrists, chiropractors, and other health practitioners running smoothly. The scope of practice of

23 There may be other Dental Assistant programs among the region's Regional Occupations Programs (ROP) and public Adult Vocational Schools that are not considered "approved" by COMDA. Furthermore, Dental Assistants may simply receive on-the-job training, forgoing formal training.

24 Over the period 2005-2007, between 15% and 20% of the reported Dental Assistant graduates each year were unidentified by race/ethnicity. This is high by comparison with other programs analyzed in this report (typically between 5% and 10% of reported graduates are unidentified by race/ethnicity). It is not known how the overall racial/ethnic composition of graduates would be affected if the race/ethnicity of these students was identified.

Table 19.
2007 Medical Assistant Estimated Employment and Employment per Population, and 2008 Median Annual Wage by County

County	Current Employment Estimates		
	Employment	Employment per 100,000 Population	Median Annual Wage
Alameda/Contra Costa	3860	150	$34,278
Marin/San Francisco/San Mateo	2740	152	$38,043
Santa Clara	3050	168	$36,962

Source: California Employment Development Department, Labor Market Information Division

Table 20.
2004-2014 Medical Assistant Employment Projections by County

County	Projected Employment Estimates				
	Openings/ Year	Annual Growth Rate		Annual Turnover Rate	
		Med Asst	Average	Med Asst	Average
Alameda/Contra Costa	81	2.1%	0.9%	1.8%	2.3%
Marin/San Francisco/San Mateo	76	2.3%	0.8%		
Santa Clara	106	2.7%	1.0%		

Source: California Employment Development Department, Labor Market Information Division

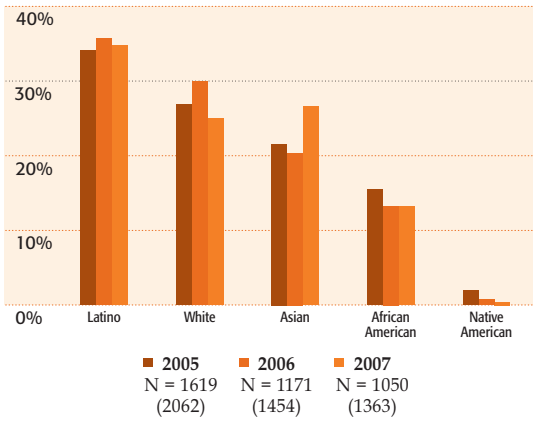
The employment outlook shows very strong growth in employment opportunity for Medical Assistants across the region. In both Santa Clara County and the Marin/San Francisco/ San Mateo county group, the projected growth rate is nearly three times the average rate.

medical assistants varies from office to office, depending on the location and size of the practice and the practitioner's specialty. In small practices, medical assistants usually are generalists, handling both administrative and clinical duties and reporting directly to an office manager, physician, or other health practitioner. In larger practices or clinics, Medical Assistants tend to specialize in a particular area and are under the supervision of department administrators. Clinical duties vary according to state law and include taking medical histories and recording vital signs, explaining treatment procedures to patients, preparing patients for examination, and assisting the physician during the examination.

Employment, Wage, and Education Data: Medical Assistant

See Tables 19 and 20

Figure 12.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Medical Assistant Programs: Bay Area Region



Source: Integrated Postsecondary Education Data System (IPEDS)

Summary of Employment, Wage, and Education Data: Medical Assistant

The labor market data show that current employment conditions for Medical Assistants are consistent across the region. There are only minor variations in the size of the employment per population ratio and the estimated median wage. The employment outlook shows very strong growth in employment opportunity for Medical Assistants across the region. In both Santa Clara County and the Marin/San Francisco/San Mateo county group, the projected growth rate is nearly three times the average rate. These data also indicate that industry growth will account for more job opportunities compared with replacement needs. Again, the caveat regarding the coverage of these data for occupations that have some self-employment component applies here. The projected number of annual job openings may be understated due to the fact that Medical Assistants frequently work for self-employed physicians.

Educational opportunities for Medical Assistants are widespread. In the database used for this analysis, we identified 23 different programs reporting graduates. We believe that this is only a sample[25] of the total number of programs in the region. There are other Regional Occupational Programs (ROPs) and public Adult Vocational Schools that also offer Medical Assistant training, but do not report student data. As with Dental Assistants, the largest individual Medical Assistant education programs, in terms of the number of graduates, are hosted by less than-two-year, private, for-profit institutions. In 2007, private schools produced close to 80% of the reported Medical Assistant graduates in the region. The preponderance of private schools in Medical Assisting may indicate a lack of public programs, a lack of capacity in public programs, or features such as flexible course schedules and availability that may be attractive to students.

The data indicate a big drop in the number of graduates between 2005 and 2006 and then a smaller drop between 2006 and 2007. Two of the region's most productive private for-profit institutions (in terms of the annual number of Medical Assistant graduates) experienced an ownership change during this period. The chain of Bryman Colleges became part of the Everest College/Everest Institute group, and Silicon Valley College (Alameda County) became part of the Western Career College group and now operates as Western Career College-Fremont. The institutions affected by this ownership change all experienced a substantial decline in the number of graduates between 2005 and 2006. At the same time, the drop in the number of Medical Assistant graduates may reflect changes in employment demand; it may have weakened during this period.

The gender composition of graduates from the region's Medical Assistant programs heavily favors women, who represent 90% of the total. In contrast, the racial/ethnic profile is very diverse. Latino students form the largest racial/ethnic group with roughly 35% of the total, but all groups are well represented. The proportional representation of White students in the region's Medical Assistant programs is among the lowest of all the programs selected for analysis in this report.

25 Although we acknowledge that the medical assistant education data presented here are only a sample, we believe they are representative in that the reporting programs are a mix of public and private, two-year and less than-two-year institutions.

Table 21.
2007 Pharmacy Technician Estimated Employment and Employment per Population, and 2008 Median Annual Wage by County

County	Current Employment Estimates		
	Employment	Employment per 100,000 Population	Median Annual Wage
Alameda/Contra Costa	1580	61	$38,000
Marin/San Francisco/San Mateo	1500	83	$41,392
Santa Clara	1300	71	$40,373

Source: California Employment Development Department, Labor Market Information Division

Table 22.
2004-2014 Pharmacy Technician Employment Projections by County

County	Projected Employment Estimates				
	Openings/ Year	Annual Growth Rate		Annual Turnover Rate	
		Pharm Tech	Average	Pharm Tech	Average
Alameda/Contra Costa	45	2.0%	0.9%	1.3%	2.3%
Marin/San Francisco/San Mateo	37	1.9%	0.8%		
Santa Clara	33	2.1%	1.0%		

Source: California Employment Development Department, Labor Market Information Division

PHARMACY TECHNICIAN

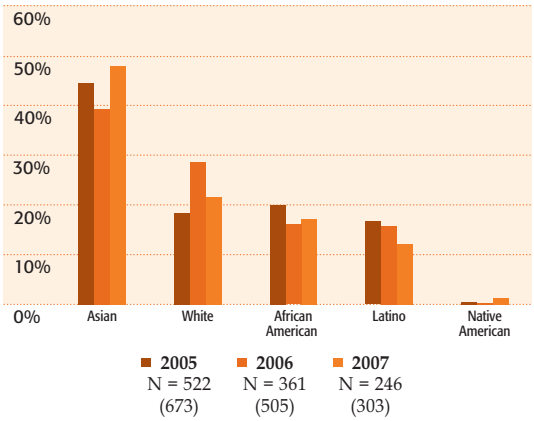
Description: Pharmacy Technician

Pharmacy Technician is a registered profession in California. As of January 2004, prior experience as a Pharmacy Clerk or even as a Pharmacy Technician is no longer an acceptable qualification for registration in the state. Registered Pharmacy Technicians must meet educational standards defined by the California State Board of Pharmacy. The scope of work for Pharmacy Technicians encompasses routine tasks meant to help prepare prescribed medication for patients, such as counting tablets and labeling bottles. Those working in retail or mail-order pharmacies have varying responsibilities, such as receiving written prescriptions or requests for prescription refills from patients; preparing the prescription, which may involve mixing the medication; establishing and maintaining patient profiles; preparing insurance claims; and managing inventory. In hospitals, nursing homes, and assisted-living facilities, pharmacy technicians have additional responsibilities, including reading patients' charts and preparing and delivering medicines to patients.

Employment, Wage, and Education Data: Pharmacy Technician

See Tables 21 and 22

Figure 13.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Pharmacy Technician Programs: Bay Area Region



Source: Integrated Postsecondary Education Data System (IPEDS)

Summary of Employment, Wage, and Education Data: Pharmacy Technician

The labor market data show that current employment conditions for Pharmacy Technicians are consistent across the region. There are only minor variations in the size of the employment per population ratio and the estimated median wage. The employment outlook shows very strong growth in employment opportunity for Pharmacy Technicians across the region; the projected growth rate is roughly double the average rate. These data also indicate that industry growth will account for more job opportunities compared with replacement needs, and that projected replacement is well below the regional average.

The education data indicate a big drop in the number of graduates between 2005 and 2006, and then again in 2007. The same merger activity noted among Medical Assistant programs also affected Pharmacy Technician programs in the region. The two most productive private for-profit institutions (in terms of the annual number of Pharmacy Technician graduates) experienced the same changes in ownership, and these institutions both experienced a substantial decline in the number of graduates between 2005 and 2007. At the same time, the drop in the number of Pharmacy Technician graduates may reflect changes in employment demand; it may have weakened during this period.

The gender composition of graduates from the region's Pharmacy Technician programs favors women, who represent roughly 75% of the total. The racial/ethnic profile of students, although diverse, is unbalanced. Asian students represent approximately 45% of the total and are by far the largest racial/ethnic group. African American students are also very well represented, accounting for roughly 15% of the total. Latino students are slightly underrepresented, while White students are heavily underrepresented. In fact, among all of the education programs selected for this report, White students (at just 20% of the total) are the least well represented in the region's Pharmacy Technician programs.[26]

HOME HEALTH AIDE AND NURSING ASSISTANT/AIDE

Description: Home Health Aide

Home Health Aides help elderly, convalescent, or disabled persons live in their own homes instead of in a healthcare facility. Under the direction of nursing or medical staff, these aides provide health-related services. Like nursing assistants/aides, home health aides may check the pulse rate, temperature, and respiration rate of a patient; help with simple prescribed exercises; keep patients' rooms neat; and

26 Over the period 2005-2007, roughly 20% of the reported Pharmacy Technician graduates each year were unidentified by race/ethnicity. This is high by comparison with other programs analyzed in this report (typically between 5% and 10% of reported graduates are unidentified by race/ethnicity). It isn't known how the overall racial/ethnic composition of graduates would be affected if the race/ethnicity of these students was identified.

Table 23.
2007 Home Health Aide Estimated Employment and Employment per Population, and 2008 Median Annual Wage by County

County	Current Employment Estimates		
	Employment	Employment per 100,000 Population	Median Annual Wage
Alameda/Contra Costa	4030	157	$21,861
Marin/San Francisco/San Mateo	2540	140	$22,402
Santa Clara	2130	117	$20,738

Source: California Employment Development Department, Labor Market Information Division

Table 24.
2004-2014 Home Health Aide Employment Projections by County

County	Projected Employment Estimates				
	Openings/ Year	Annual Growth Rate		Annual Turnover Rate	
		HHA	Average	HHA	Average
Alameda/Contra Costa	203	4.7%	0.9%	1.3%	2.3%
Marin/San Francisco/San Mateo	133	3.7%	0.8%		
Santa Clara	99	5.8%	1.0%		

Source: California Employment Development Department, Labor Market Information Division

help patients to move from bed, bathe, dress, and groom. Occasionally, they may change non-sterile dressings and may assist with medical equipment.

Employment and Wage Data: Home Health Aide

See Tables 23 and 24

Description: Nursing Assistant/Aide

Nursing Assistants/Aides perform routine tasks under the supervision of nursing and medical staff. Such tasks include answering patients' call lights, serving meals, and helping patients to eat. They typically also dress, bathe, and provide skin care to patients; take a patient's temperature, pulse rate, respiration rate, and blood pressure; and help patients get into and out of bed and walk. They also observe patients' physical, mental, and emotional conditions and report any change to the nursing or medical staff. Nursing Assistants/Aides employed in nursing care facilities (nursing homes) are often the principal caregivers, having more contact with residents than do other members of the staff.

Employment, Wage, and Education Data: Nursing Assistant/Aide

See Tables 25 and 26

Table 25.
2007 Nursing Assistant/Aide Estimated Employment and Employment per Population, and 2008 Median Annual Wage by County

County	Current Employment Estimates		
	Employment	Employment per 100,000 Population	Median Annual Wage
Alameda/Contra Costa	7310	284	$28,933
Marin/San Francisco/San Mateo	5650	312	$35,859
Santa Clara	5470	301	$32,261

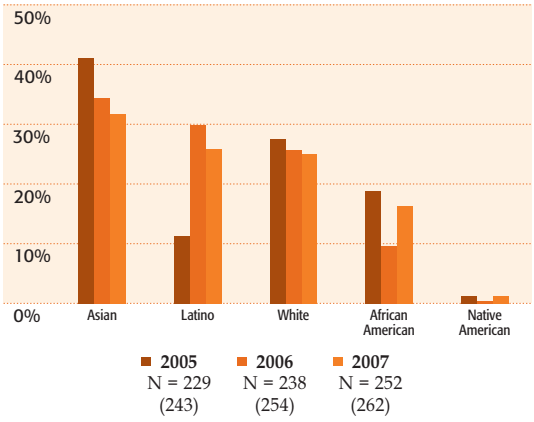
Source: California Employment Development Department, Labor Market Information Division

Table 26.
2004-2014 Nursing Assistant/Aide Employment Projections by County

County	Projected Employment Estimates				
	Openings/ Year	Annual Growth Rate		Annual Turnover Rate	
		Nurse Asst	Average	Nurse Asst	Average
Alameda/Contra Costa	222	1.6%	0.9%	1.3%	2.3%
Marin/San Francisco/San Mateo	118	0.9%	0.8%		
Santa Clara	138	1.5%	1.0%		

Source: California Employment Development Department, Labor Market Information Division

Figure 14.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Nursing Assistant/Aide Programs: Bay Area Region



Source: Integrated Postsecondary Education Data System (IPEDS)

Summary of Employment, Wage, and Education Data: Home Health Aide and Nursing Assistant/Aide

Labor market data show differences in the employment per population ratio, indicating much higher employment levels relative to the population in Alameda/Contra Costa counties. However, the estimated median wage for Home Health Aides is consistent across the region. It is also important to note that Home Health Aide wages are the lowest of any of the healthcare occupations for which estimates are available. Across the region, the employment outlook is very strong. Projected growth rates for Home Health Aide employment are four to five times higher than the average growth rate, making it one of the fastest growing

Table 27.
Number of Home Health Aide and Nursing Assistant/Aide Programs by County

County	Home Health Aide Training Programs	Nursing Assistant/Aide Programs	
		School-based Programs	Skilled Nursing Facility-based Programs
Alameda	17	28	17
Contra Costa	7	19	8
Marin	1	2	4
San Francisco	6	5	4
San Mateo	5	9	4
Santa Clara	12	18	19

Source: California Department of Health Services, Training Program Review Unit (as of June 13, 2008)

Projected growth rate for Home Health Aide employment are four to five times higher than the average growth rate, making it one of the fastest growing occupations in health care or otherwise.

occupations in health care or otherwise. Most job opportunities are expected to come from industry growth, as opposed to the need to replace workers. Because the Home Health Aide workforce is comparatively large, strong growth will translate into a significant number of jobs.

The state of California requires that Home Health Aides undergo 120 hours of training. Some students pursue a course of training that gives them dual certification as a Nursing Assistant/Aide and Home Health Aide for a total of 160 hours of training. A previously certified Nursing Assistant/Aide can become a certified Home Health Aide with an additional 40 hours of training. Home Health Aide training programs are offered by community colleges, public adult vocational programs, and through Regional Occupational Programs (ROPs) administered by local public school districts, and opportunity is thus widespread.

Home Health Aide training programs are offered by a variety of providers. According to the California Department of Public Health there are 48 Home Health Aide training programs in the Bay Area Region (see Table 27). In recent years, none of these programs have reported student data in a way that allows us to identify and describe their graduates. Student data describing Home Health Aide training programs, therefore, are not readily available; we cannot describe their racial/ethnic composition, nor can we give a sense of the number of people trained each year.

These labor market data show some regional variation in employment conditions for Nursing Assistants/Aides. Both the employment per population ratio and the estimated median wage are considerably lower in Alameda/Contra Costa counties. Nursing Assistants/Aides represent a significant share of the general healthcare workforce (only the Registered Nurse workforce is larger), which means that despite average rates of projected employment growth, there will be a comparatively large number of job

openings. These openings are expected to come from industry growth and the need to replace workers in roughly equal numbers.

The state of California requires that Nursing Assistants/Aides undergo 150 hours of training in order to become certified and these requirements are specified by the state.[27] Nursing Assistant/Aide training programs are widely available. They are offered by both schools (community colleges, public adult vocational programs, and Regional Occupational Programs (ROPs) administered by local public school districts) and skilled nursing facility-based settings.

Nursing Assistant/Aide training programs are also offered by a variety of providers. The California Department of Public Health lists 137 school-based and skilled nursing facility-based programs (see Table 27), but only six have reported student data over the past three years. Thus, student data describing Nursing Assistant/Aide training programs in the Bay Area Region is very limited. Four of the six programs reporting student data are community colleges and two are public adult vocational schools. Collectively they have produced roughly 250 graduates per year. Almost 70% of these graduates were reported by the two public adult vocational schools.

The gender and the racial/ethnic profile of these graduates mirrors that of the region's current healthcare support workforce (a very large part of which is represented by these two occupations): 85-90% of reported graduates are women; the largest racial/ethnic group of graduates is Asian who account for approximately 33% of the total; both Latinos and Whites represent roughly 20-25%, African Americans around 15%, and Native Americans about 1% of the total. We cannot be certain that these data are representative of the pipeline that produces entry-level Nursing Assistant/Aide workers in the region, nor assume that they proxy the characteristics of students trained in the region's Home Health Aide programs. However, the fact that they present a picture resembling that revealed by data describing the region's current healthcare support workforce suggests that they may.

LICENSED VOCATIONAL NURSE

Description: Licensed Vocational Nurse

Licensed Vocational Nurses (LVNs) are licensed in the state by the California Board of Vocational Nursing and Psychiatric Technicians. LVNs care for the sick, injured, convalescent, and disabled under the direction of physicians and Registered Nurses. Most LVNs provide basic bedside care, taking vital signs, such as temperature, blood pressure, pulse, and respiration. They also collect samples for testing, perform routine laboratory tests, feed patients, and record food and fluid intake and output. Experienced LVNs may supervise Nursing Assistants/Aides. In California, they also may administer prescribed medicines or start intravenous fluids. Also in California, as in much of the country, LVNs make up the bulk of the nursing staff in nursing homes and long-term care facilities. They are less frequently employed in inpatient acute care settings.

27 Details are available at http://www.dhs.ca.gov/lnc/download/cert/CertificationFacts.pdf

Table 28.
2007 Licensed Vocational Nurse Estimated Employment and Employment per Population, and 2008 Median Annual Wage by County

County	Current Employment Estimates		
	Employment	Employment per 100,000 Population	Median Annual Wage
Alameda/Contra Costa	3470	135	$57,304
Marin/San Francisco/San Mateo	2970	164	$58,522
Santa Clara	2330	128	$57,886

Source: California Employment Development Department, Labor Market Information Division

Table 29.
2004-2014 Licensed Vocational Nurse Employment Projections by County

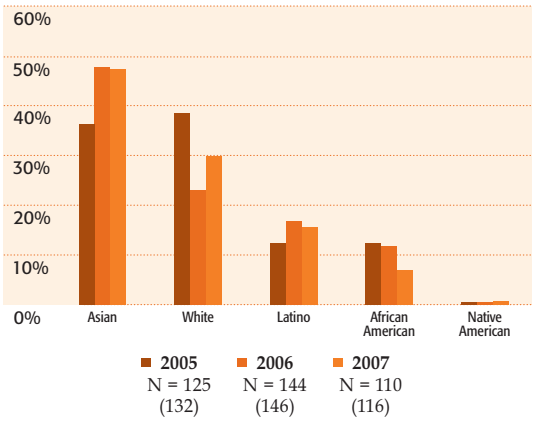
County	Projected Employment Estimates				
	Openings/ Year	Annual Growth Rate		Annual Turnover Rate	
		LVN	Average	LVN	Average
Alameda/Contra Costa	104	0.9%	0.9%	2.2%	2.3%
Marin/San Francisco/San Mateo	66	0.4%	0.8%		
Santa Clara	67	0.9%	1.0%		

Source: California Employment Development Department, Labor Market Information Division

Employment, Wage, and Education Data: Licensed Vocational Nurse

See Tables 28 and 29

Figure 15.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Licensed Vocational Nursing Programs: Bay Area Region



Source: Integrated Postsecondary Education Data System (IPEDS)

Summary of Employment, Wage, and Education Data: Licensed Vocational Nurse

Labor market data indicate regional differences in the employment per population ratio for LVNs, which is considerably larger in Marin/San Francisco/San Mateo counties. However, the estimated median wage is consistent across the Bay Area Region. The employment outlook indicates average growth for LVNs and that most opportunities will come from the need to replace workers.

According to the California Board of Vocational Nursing and Psychiatric Technicians there are currently 29 approved LVN programs in the Bay Area Region. As with the student data for Nursing Assistant/

Roughly 75% of the region's LVN programs are offered by private, for-profit institutions.

Aide programs, LVN education data is very limited. Only 5 of these 29 programs (all community colleges) have reported student data in a way that allows us to identify and describe LVN graduates. The data indicate that these five community colleges produce 115-140 new graduates in a year, 80-85% of whom are women. Their racial/ethnic composition heavily favors Asian students, who have grown in number and accounted for almost half the total number of graduates in 2007. White students represent roughly 30%, Latino students approximately 15%, African American students around 10%, and Native American students about 0.5% of the total number of graduates each year.

We do not know how well these data represent new entrants to the region's LVN workforce. As noted, only 5 of the known 29 programs are identified. Of the 24 other approved programs in the region (not reporting student data), two are offered through public adult vocational schools and one is a Regional Occupational Program (ROP). The rest are private schools, which means that roughly 75% of the region's LVN programs are offered by private, for-profit institutions.

NURSE PRACTITIONER

Description: Nurse Practitioner

Nurse Practitioners (NPs) are advanced practice nurses who work independently or in collaboration with physicians. Other advanced practice nurses include Nurse-Midwives, Clinical Nurse Specialists, and Nurse Anesthetists. Nurse Practitioners provide basic preventive health care to patients, and they increasingly serve as primary and specialty care providers in medically underserved areas. In California, Nurse Practitioners can furnish (order) medications. The most common areas of specialty for Nurse Practitioners are family practice, adult practice, women's health, pediatrics, acute care, and gerontology.

The Nurse Practitioner credential is a post-license certification regulated by the California Board of Registered Nursing (BRN). Approximately 6.6% of the current California-licensed RN workforce holds the NP certification.[28] In 2004, a new regulation was chaptered into law establishing possession of a master's degree in nursing as a requirement for certification as a Nurse Practitioner (AB 2226).[29] According to Section 2835.5 of the Nursing Practice Act,[30] "on and after January 1, 2008, an applicant for initial qualification or certification as a nurse practitioner" must "possess a master's degree in nursing, a master's degree in a clinical field related to nursing, or a graduate degree in nursing."

Employment, Wage, and Education Data: Nurse Practitioner

Wage data and employment projections data specifically describing Nurse Practitioners are not available. Therefore, we cannot present any analysis of their employment conditions or outlook; no data is included here. Education data are limited to graduates of Master of Science in Nursing (MSN) programs generally, not Nurse Practitioner programs specifically. Therefore Figure 16 describes the racial/ethnic composition of graduates of the region's MSN programs that offer Nurse Practitioner training (although these data also include

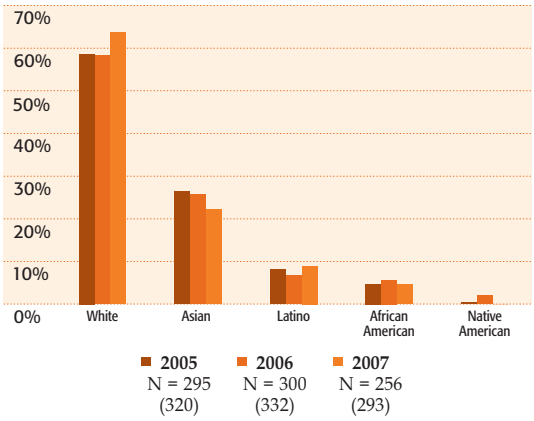
28 J. Spetz et al., *Survey of Registered Nurses in California, 2006*. Center for California Health Workforce Studies and School of Nursing, University of California, San Francisco. June 2007. Conducted on behalf of the California Board of Registered Nursing.

29 http://www.rn.ca.gov/leg/leg2004.htm#AB2226

30 http://www.rn.ca.gov/npa/npa.htm

graduates of these programs who did not receive Nurse Practitioner training).

Figure 16.
2006–2007 Racial/Ethnic Composition for Reported Graduates of Post-License Nursing Programs: Bay Area Region



Source: CA Board of Registered Nursing Annual Schools Survey

Summary of Education Data: Nurse Practitioner

Although there are no labor market data specifically describing the employment conditions for Nurse Practitioners, we do know that the employment outlook for Registered Nurses in the Bay Area Region is strong. Registered Nurses in the region are very well paid: the estimated median wage is roughly $95,000 per year. The RN labor force is also the largest of any healthcare occupation and even modest growth, combined with the need to replace RNs who leave the workforce, will create a substantial number of employment opportunities.

There are five schools in the Bay Area Region that train Nurse Practitioners.[31] Collectively, they have produced 300-330 new MSN graduates per year in each of the past three years. We do not know what proportion of these graduates received training as a Nurse Practitioner. The program at the University of California, San Francisco (UCSF) is by far the largest, at two to three times the size of the other programs.[32] Approximately, 85-90% of the MSN graduates each year that receive the MSN degree from one of the region's schools that offers Nurse Practitioner training are women. Collectively, White (60%) and Asian (25%) students represent 85% of these graduates; while roughly, 8% are Latino, 5% are African American, and the three to five Native American graduates each year compose less than 1% of the total.

PHYSICIAN ASSISTANT

Description: Physician Assistant

Physician Assistants (PAs) practice medicine under the supervision of physicians. They may be the principal care providers in rural or inner city clinics, where a physician is only present for one or two days each week. Many PAs work in primary care specialties such as general internal medicine, pediatrics, and family medicine. They are formally trained to provide diagnostic, therapeutic, and preventive healthcare services, as delegated by a physician. Working as members of the healthcare team, they take medical histories, examine and treat patients, order and interpret laboratory tests and x-rays, and make diagnoses. In California, PAs are licensed to prescribe medication when authority has been delegated by the supervising physician.

Employment, Wage, and Education Data: Physician Assistant

See Tables 30 and 31

31 UC San Francisco (UCSF), Samuel Merritt, San Jose State, San Francisco State, and Holy Names University have Nurse Practitioner programs; the Dominican University of California and the University San Francisco offer the Master of Science in Nursing degree (and collectively produce 50-60 graduates per year), but do not train Nurse Practitioners.

32 In descending order by size (number of graduates/year): UCSF, Samuel Merritt, SFSU, SJSU, and Holy Names University.

Table 30.
2007 Physician Assistant Estimated Employment and Employment per Population, and 2008 Median Annual Wage by County

County	Current Employment Estimates		
	Employment	Employment per 100,000 Population	Median Annual Wage
Alameda/Contra Costa	820	32	$89,232
Marin/San Francisco/San Mateo	270	15	$84,864
Santa Clara	220	12	$98,717

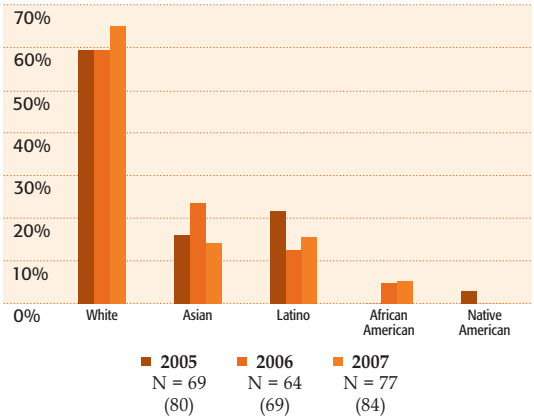
Source: California Employment Development Department, Labor Market Information Division

Table 31.
2004-2014 Physician Assistant Employment Projections by County

County	Projected Employment Estimates				
	Openings/ Year	Annual Growth Rate		Annual Turnover Rate	
		Phys Asst	Average	Phys Asst	Average
Alameda/Contra Costa	47	2.5%	0.9%	1.4%	2.3%
Marin/San Francisco/San Mateo	9	2.7%	0.8%		
Santa Clara	5	2.0%	1.0%		

Source: California Employment Development Department, Labor Market Information Division

Figure 17.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Physician Assistant Programs: Bay Area Region



Source: Integrated Postsecondary Education Data System (IPEDS)

Summary of Employment, Wage, and Education Data: Physician Assistants

Labor market data indicate regional differences in the current employment conditions for Physician Assistants. The employment per population ratio in Alameda/Contra Costa counties is two to three times larger compared with the other counties in the region. There is also a roughly $10,000-$15,000 difference in the estimated median wage comparing Physician Assistants in Santa Clara County with the rest of the region. The employment outlook for PAs is strong, with projected growth rates two to three times the average rate. Most job opportunities are expected to come from industry growth as opposed to the need to replace workers. However, this is a small workforce, meaning that even strong growth

translates into a comparatively small number of job openings. Furthermore, because the level of employment is so much higher in Alameda/Contra Costa counties, most of the job openings will be located there.

There are two PA training programs in the region: one at Samuel Merritt College (Alameda County) and another cooperatively administered by Stanford Medical School and Foothill College (both in Santa Clara County). Data indicate the two programs produce 70-80 graduates per year and that they are comparable in size (although Stanford/Foothill may be slightly larger). The gender composition of these graduates is roughly 60% women, 40% men. White graduates represent approximately 60% of the total number each year; the proportions of Asian and Latino graduates appear to roughly comparable in size (taking into account that three or four students more or less can cause a fairly big proportional shift). In 2005, there were no African American graduates reported, but in 2006 and 2007 there were three and 4 graduates respectively (about 5% of the total). In 2005, there were two Native American graduates reported, but in both 2006 and 2007 there were none reported.

The Stanford Medical School/Foothill College program has an explicit mission of training PAs committed to practicing in medically underserved areas, as well as increasing the "enrollment and deployment of underrepresented minorities". The program's listed criteria for admissions include: evidence of a candidates "dedication to medically underserved areas and populations". And descriptions of the program curriculum reinforce this aspect: "the program includes a multicultural lecture series in social, economic, and health issues within the Latino, African-American, Asian, and American Indian" populations.[33]

The program at Stanford Medical School/Foothill College also extends its network to other parts of the state, beyond the Bay Area Region. It has a satellite presence in Kern, San Benito, Imperial, and San Diego counties, where it conducts "community-based recruitment" and has established program admissions and clinical preceptorships. Part of the mission for these satellites is to train students that have local roots and a history of working with medically underserved populations.

RESPIRATORY THERAPIST

Description: Respiratory Therapist

Respiratory Therapists are primarily responsible for the evaluation and treatment of patients with breathing or cardiopulmonary illnesses. They work under the direction of a physician and consult with the physician during a patient's treatment. Respiratory Therapists treat a wide range of patients in diverse settings, from pediatric ICU patients to elderly patients in long-term care facilities to asthmatic patients in emergency departments. They primarily treat patients using oxygen, other gas mixtures, or aerosolized medications; and they sometimes employ equipment in the delivery of treatment, such as ventilators, to help patients who cannot breathe on their own.

Employment, Wage, and Education Data: Respiratory Therapist

See Tables 32 and 33

33 For more information on the Stanford/Foothill College Physician Assistant program see: http://pcap.stanford.edu/program/pa.html

Table 32.
2007 Respiratory Therapy Estimated Employment and Employment per Population, and 2008 Median Annual Wage by County

County	Current Employment Estimates		
	Employment	Employment per 100,000 Population	Median Annual Wage
Alameda/Contra Costa	660	26	$67,704
Marin/San Francisco/San Mateo	440	24	$62,130
Santa Clara	520	29	$77,501

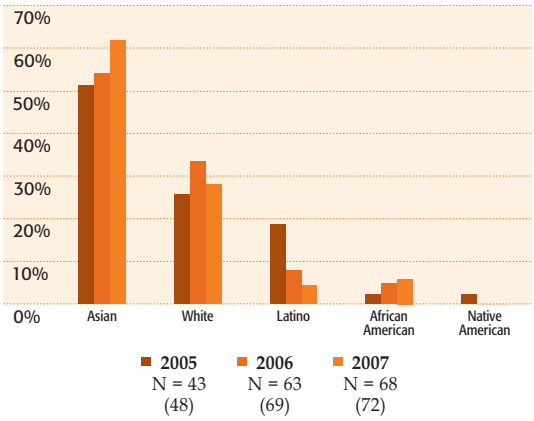
Source: California Employment Development Department, Labor Market Information Division

Table 33.
2004-2014 Respiratory Therapy Employment Projections by County

County	Projected Employment Estimates				
	Openings/ Year	Annual Growth Rate		Annual Turnover Rate	
		Resp Ther	Average	Resp Ther	Average
Alameda/Contra Costa	40	2.0%	0.9%	3.3%	2.3%
Marin/San Francisco/San Mateo	28	2.2%	0.8%		
Santa Clara	23	1.5%	1.0%		

Source: California Employment Development Department, Labor Market Information Division

Figure 18.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Respiratory Therapist Programs: Bay Area Region



Source: Integrated Postsecondary Education Data System (IPEDS)

Summary of Employment, Wage, and Education Data: Respiratory Therapist

The labor market data indicate that while Respiratory Therapists are equally distributed across the region's population, there is a significant wage differential. The estimated median wage for Respiratory Therapists is $10,000-$15,000 per year higher in Santa Clara County. The employment outlook is strong, with an above average growth rate projected for Santa Clara County and projected growth rates roughly twice the average rate in Marin/San Francisco/San Mateo and Alameda/Contra Costa counties. Despite projections of strong industry growth, the need to replace workers is expected to be a significant source of job openings.

There are five Respiratory Therapy training programs in the Bay Area Region; one is cooperatively administered by Ohlone College (Alameda County) and Diablo Valley College (Contra Costa County). There is also a new program at Western Career College-Pleasant Hill (Contra Costa County), which enrolled its inaugural class in September 2007.

Data not shown here indicate that the number of Respiratory Therapy graduates had been declining through the late 1990s and early 2000s,[34] most likely the result of structural economic shifts and a new regulation requiring the associate's degree as a condition for licensure. Current data indicate a reversal of this trend; the total number of graduates produced by the region's Respiratory Therapy programs increased sharply between 2005 and 2006, from a total of 49 to a total of 69 (and 72 in 2007). When the new program at Western Career College-Pleasant Hill is at full capacity, which will take several years from its inaugural 2007 class, it may add as many as 40-45 new graduates per year to the region's supply of new entrants to the workforce.

The gender composition of graduates of Respiratory Therapy programs in the region is comparatively balanced; men represent 30-35% of the total number of graduates each year. These data also indicate that the increase in the number of graduates in recent years is the result of increasing numbers of Asian and White students. Collectively, the concentration of Asian and White students has grown from 75% of the total in 2005 to almost 90% in 2007. In each of the past three years, the number of Latino graduates has declined.

RADIOLOGIC TECHNOLOGIST

Description: Radiologic Technologist[35]

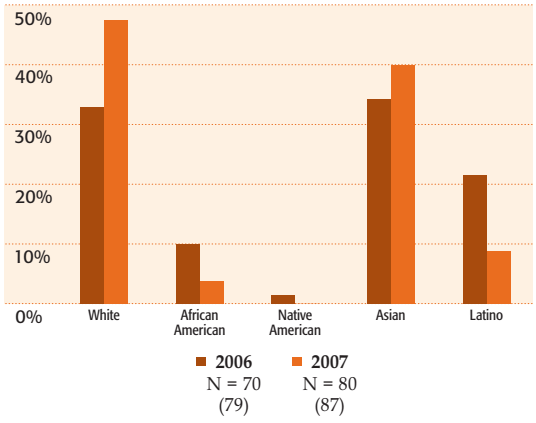
Radiologic Technologists are responsible for taking patient x-rays and for the dosing of nonradioactive materials into the bloodstream for diagnostic imaging purposes. This responsibility also includes explaining to patients the radiographic procedure and safety precautions, as well as following precise procedures requested by physicians. The technologist must understand preparation and positioning of the patient and the appropriate use of safety shields to block excess radiation exposure. Radiologic Technologists are also responsible for the development of the film, patient record keeping, and adjustment and maintenance of the equipment.

The employment outlook for Radiologic Technologists indicates slightly above average growth and that more job openings will result from the need to replace workers rather than from industry growth.

Employment, Wage, and Education Data: Radiologic Technologist

See Tables 34 and 35

Figure 19.
2006–2007 Racial/Ethnic Composition for Reported Graduates of Radiologic Technology Programs: Bay Area Region



Source: Integrated Postsecondary Education Data System (IPEDS)

34 See the authors' 2007 analysis of the supply of health professions graduates in California, *Tracking the Supply of Health Professions Education Programs in California.* Available at: http://futurehealth.ucsf.edu/pdf_files/HWTC%20Tracking%20the%20Supply%207%2026%2007%20FINAL.pdf

35 Labor market data includes Radiologic Technicians.

Table 34.
2007 Radiologic Technologist Estimated Employment and Employment per Population, and 2008 Median Annual Wage by County

County	Current Employment Estimates		
	Employment	Employment per 100,000 Population	Median Annual Wage
Alameda/Contra Costa	920	36	$73,320
Marin/San Francisco/San Mateo	830	46	$64,314
Santa Clara	–	–	$75,358

Source: California Employment Development Department, Labor Market Information Division

Table 35.
2004-2014 Radiologic Technologist Employment Projections by County

°County	Projected Employment Estimates				
	Openings/ Year	Annual Growth Rate		Annual Turnover Rate	
		Rad Tech	Average	Rad Tech	Average
Alameda/Contra Costa	27	1.3%	0.9%	1.9%	2.3%
Marin/San Francisco/San Mateo	27	1.5%	0.8%		
Santa Clara	17	1.3%	1.0%		

Source: California Employment Development Department, Labor Market Information Division

Summary of Employment, Wage, and Education Data: Radiologic Technologist

Labor market data indicate regional differences in the current employment conditions for Radiologic Technologists. The employment per population ratio is considerably higher in Marin/San Francisco/San Mateo counties,[36] but the estimated median wage is also roughly $10,000 per year lower. This wage difference may reflect the larger supply of workers, as evidenced by the higher employment per population ratio, which could put downward pressure on wages. However, these labor market data also include technician level workers, who earn lower wages compared to technologists. It is possible that the sample used to generate wage estimates for workers in the Marin/San Francisco/San Mateo area simply contained a greater number of technician level observations, thus creating a downward bias on the wage estimate. The employment outlook for Radiologic Technologists indicates slightly above average growth and that more job openings will result from the need to replace workers rather than from industry growth. Again, it must be stressed that these labor market data include technician level jobs, making it very difficult to forecast the outlook for Radiologic Technologists specifically.

Radiologic Technology programs typically take 18-24 months to complete, resulting in either an associate's degree or a certificate for those already in possession of a degree. The education data included here represent

36 Current employment data for Santa Clara are missing, but based on projections data we estimated that total employment in Santa Clara is 560, which translates to an employment-per-population ratio of 31 per 100,000 people.

three of the region's five Radiologic Technology programs. We were not able to obtain detailed data describing graduates of either the program at City College of San Francisco or the Kaiser Permanente School of Allied Health Sciences[37] in Richmond (Contra Costa County).

The three programs reporting data indicate a gender composition that is comparatively balanced, with men representing roughly 40% of the total number of graduates. These data indicate that overall growth in the number of graduates between 2006 and 2007 was the result of an increasing number of White and Asian students. Collectively, White and Asian students represented almost 90% of the total number of graduates at the three schools reporting student data. However, it is difficult to draw conclusions with regard to gender or racial/ethnic composition because of the small number of graduates. A small increase or decrease in the number of graduates from any one group, one year to the next, can cause a fairly dramatic shift in the composition. If we were able to include student data from the programs at City College of San Francisco and Kaiser Permanente, the total number of graduates would increase to 130-140 per year.[38] However, we do not know how these would alter the demographic profile of graduates.

EMT/PARAMEDIC[39]

Description: EMT/Paramedic

EMTs and Paramedics provide vital care to patients under emergency conditions. Typically they are dispatched to the scene by a 911 operator and often work with police and fire department personnel. At the scene of an emergency, EMTs and Paramedics determine the nature and extent of the patient's condition, and following strict rules and guidelines, give appropriate emergency care and, when necessary, transport the patient.

Two wage levels are presented in the data below. This is because EMTs and Paramedics are grouped together in the data and median wages give a misleading picture of earnings. We know that the EMT and Paramedic workforce is generally distributed two-thirds EMTs and one-third Paramedics.[40] EMTs make significantly less than Paramedics and undergo less training. Thus, the median wage is biased downward due to the more heavily represented EMTs. We present wage estimates at the 25th percentile and at the 75th percentile,[41] believing that this better represents the earnings differences between EMTs and Paramedics.

37 Students who successfully complete the Radiologic Technology certificate program at Kaiser Permanente can earn an Associate in Science degree at Contra Costa Community College by completing additional, general education coursework. Data indicate that very few students pursue this option.

38 Kaiser Permanente graduates 35-40 students each year, City College of San Francisco graduates 20-25 students each year.

39 The education program completions data appear to describe Paramedic programs, but likely include data describing EMT programs as well.

40 National Highway Traffic Safety Administration. (2007). *EMS Workforce for the 21st Century: A National Assessment.* San Francisco, CA: University of California San Francisco Center for the Health Professions and University of Washington Center for Health Workforce Studies.

41 Workers at the 25th or 75th percentile earn more than 25% or 75% of all other workers in that occupation.

Employment and Wage Data: EMT/Paramedic

See Tables 36 and 37

Summary of Employment and Wage Data: EMT/Paramedic

Labor market data describing employment conditions for EMTs/Paramedics reveal substantial regional differences. The employment per population ratio is much lower and estimated wages are much higher in Marin/San Francisco/San Mateo counties. These data suggest that relative to the population, there are roughly half as many EMTs/Paramedics in Marin/San Francisco/San Mateo counties compared with the other counties in the broader Bay Area Region.[42] Furthermore, there is a roughly $10,000 per year difference at the 25th percentile and a $20,000-$25,000 per year difference at the 75th percentile. One possible explanation for this huge wage differential is that the limited supply of workers creates an upward pressure on wages. However, it is also important to remember that these labor market data represent both Paramedics and EMTs, and there is a significant wage differential between these two occupations. Another possible explanation for the wage differential is that the ratio of working Paramedics to working EMTs in Marin/San Francisco/San Mateo counties favors Paramedics to a degree that it does not in the other counties of the Bay Area Region. This would bias the wage estimates in Marin/San Francisco/San Mateo counties upward

Table 36.
2007 EMT/Paramedic Estimated Employment and Employment per Population, and 2008 Annual Wages at 25th/75th Percentile by County

County	Current Employment Estimates			
	Employment	Employment per 100,000 Population	Annual Wage	
			25th Percentile	75th Percentile
Alameda/Contra Costa	–	–	$21,860	$29,328
Marin/San Francisco/San Mateo	410	23	$31,304	$54,371
Santa Clara	750	41	$22,318	$33,467

Source: California Employment Development Department, Labor Market Information Division

Table 37.
2004-2014 EMT/Paramedic Employment Projections by County

County	Projected Employment Estimates				
	Openings/ Year	Annual Growth Rate		Annual Turnover Rate	
		EMT/P	Average	EMT/P	Average
Alameda/Contra Costa	17	0.5%	0.9%	1.2%	2.3%
Marin/San Francisco/San Mateo	5	0.8%	0.8%		
Santa Clara	17	1.3%	1.0%		

Source: California Employment Development Department, Labor Market Information Division

42 Based on available projections data, our best-guess estimate of 2007 EMT/Paramedic employment in Alameda/Contra Costa counties is 1100, which translates to an employment-per-population ratio of 43 per 100,000 people.

in favor of better paid Paramedics. The employment outlook shows comparatively weak job growth for EMTs/Paramedics, with slightly above average growth projected for Santa Clara County, average growth projected for Marin/San Francisco/San Mateo counties, and below average growth in Alameda/Contra Costa counties.

There are many types of education training sites for EMTs/Paramedics, including ambulance services and fire departments, as well as community colleges and private schools. However, the available data are too limited to be representative of the region's supply of new entrants to the EMT/Paramedic workforce; therefore we have not included them. There are at least ten training programs located in the Bay Area Region, nine of which are in the community college system. However, only three of these programs have reported student data in any of the past three years. These very limited data indicate that roughly 75% of graduates are men, while anywhere from 60-70% are White. Again, with so few programs reporting, these data cannot be considered representative.

CLINICAL LABORATORY SCIENTIST

Description: Clinical Laboratory Scientist

Clinical Laboratory Scientists perform a range of complex laboratory tests and procedures that involve knowledge of chemistry, biology, microbiology, molecular biology, hematology, immunology, toxicology, histology, and cytogenetics. The Clinical Laboratory Scientist (aka

Table 38.
2007 Clinical Laboratory Scientist Estimated Employment and Employment per Population, and 2008 Median Annual Wage by County

County	Current Employment Estimates		
	Employment	Employment per 100,000 Population	Median Annual Wage
Alameda/Contra Costa	820	32	$70,075
Marin/San Francisco/San Mateo	670	37	$72,675
Santa Clara	770	42	$82,326

Source: California Employment Development Department, Labor Market Information Division

Table 39.
2004-2014 Clinical Laboratory Scientist Employment Projections by County

County	Projected Employment Estimates				
	Openings/ Year	Annual Growth Rate		Annual Turnover Rate	
		CLS	Average	CLS	Average
Alameda/Contra Costa	25	1.3%	0.9%	2.7%	2.3%
Marin/San Francisco/San Mateo	38	1.4%	0.8%		
Santa Clara	29	1.4%	1.0%		

Source: California Employment Development Department, Labor Market Information Division

the Medical Technologist or Clinical Laboratory Technologist) is a generalist qualified to conduct necessary tests and procedures across this entire range of specialized areas. There is also a category called *limited Clinical Laboratory Scientist*, which describes professionals who conduct tests and procedures solely within a specialized area of knowledge, such as toxicology or cytogenetics.

Employment and Wage Data: Clinical Laboratory Scientist

See Tables 38 and 39

Summary of Employment and Wage Data: Clinical Laboratory Scientist

Labor market data indicate regional differences in current employment conditions for Clinical Laboratory Scientists. The employment per population ratio is largest in Santa Clara County, although the differences in this measure are not dramatic. However, there is a roughly $10,000 per year differential in the median wage, favoring Clinical Laboratory Scientists in Santa Clara County. One possible explanation for this wage differential is that the industry profile for laboratory science in Santa Clara County may be different by comparison with the rest of the region.[43] The employment outlook indicates above average growth for Clinical Laboratory Scientists, but also that replacement needs are expected to account for two out of every three job openings.

The basic requirement for admission to a Clinical Laboratory Science training program is a baccalaureate degree in the natural sciences and the training itself is a 12-month post-baccalaureate program at an approved site. For the generalist Clinical Laboratory Scientist, there are two approved programs in the Bay Area Region: San Francisco State University and San Jose State University; both programs coordinate with more than a dozen hospitals and independent laboratories to provide clinical experience. Collectively, these two programs may train as many as 40-45 Clinical Lab Scientists every year. There are also two regional programs that have been approved to train the specialist (limited) Clinical Laboratory Scientists: University of California, San Francisco and TPMG Regional Genetics Laboratory. It is not known how many new specialist Clinical Laboratory Scientists these programs train. There are no readily available data describing Clinical Laboratory Science training programs, generalist or specialist. Therefore, we cannot include any information on their gender or racial/ethnic composition.

In addition to the aging of this workforce, a severe decline in the number of training programs and candidates for licensure will be critical factors shaping both regional supply and demand for Clinical Laboratory Scientists in the future. Between 1975 and 2000, the number of labs in California approved to train Clinical Laboratory Scientists declined by 90%, from roughly 200 to just 20.[44] In recent years, the number has increased and there are currently 51 different labs, affiliated with 11 different higher education institutions and hospitals, around the state.[45] However, these programs are generally much smaller than other allied health training programs. In some programs, there is a limit of two to three students per year because of the need for close

43 For example, Santa Clara County is home to a thriving biotechnology sector, which may be a source of employment for specialized laboratory scientists.

44 From a presentation made by Robert Thomas, Section Chief, Laboratory Field Services, California Department of Public Health at a May 2006 Bay Area Lab Administrators meeting

45 Laboratory Field Services, California Department of Public Health

Table 40.
2007 Psychiatric Technician Estimated Employment and Employment per Population, and 2008 Median Annual Wage by County

County	Current Employment Estimates		
	Employment	Employment per 100,000 Population	Median Annual Wage
Alameda/Contra Costa	–	–	$46,550
Marin/San Francisco/San Mateo	–	–	–
Santa Clara	390	21	$49,254

Source: California Employment Development Department, Labor Market Information Division

Table 41.
2004-2014 Psychiatric Technician Employment Projections by County

County	Projected Employment Estimates				
	Openings/ Year	Annual Growth Rate		Annual Turnover Rate	
		Psych Tech	Average	Psych Tech	Average
Alameda/Contra Costa	4	0%	0.9%	1.4%	2.3%
Marin/San Francisco/San Mateo	2	0%	0.8%	1.1%	
Santa Clara	3	0%	1.0%	1.3%	

Source: California Employment Development Department, Labor Market Information Division

Table 42.
2005-2007 Reported Graduates of the Psychiatric Technician Program at Mission College by Race/Ethnicity

Year	Gender		Race/Ethnicity						
	M	F	Asian	White	African	Latino	Native		Total
2005	7	23	13	7	8	1	0	1	30
2006	11	7	9	3	3	2	0	1	18
2007	4	13	4	5	4	1	0	3	17

Source: Integrated Postsecondary Education Data System (IPEDS)

In addition to the aging of this workforce, a severe decline in the number of training programs and candidates for licensure will be critical factors shaping both regional supply and demand for Clinical Laboratory Scientists in the future.

supervision and intensive clinical instruction. Similarly, the number of candidates for licensure who were trained in California's Clinical Laboratory Science programs declined by approximately 90% in the last two-and-a-half decades, from roughly 860 candidates in 1980 to just 96 in 2005.[46]

PSYCHIATRIC TECHNICIAN

Description: Psychiatric Technician

Psychiatric Technicians (Psych Techs) are licensed in the state by the California Board of Vocational Nursing and Psychiatric Technicians. They care for mentally impaired or emotionally disturbed individuals, following physician instructions and

46 Thomas, May 2006.

hospital procedures. Psych Techs monitor patients' physical and emotional well-being. They may also participate in rehabilitation and treatment programs, help patients with personal hygiene, and administer oral medications and hypodermic injections. Workplace settings are most often a psychiatric hospital or a mental health clinic. More recently, Psych Techs have been employed in large numbers in mental health correctional facilities.

Employment, Wage, and Education Data: Psychiatric Technician

See Tables 40 and 41

There is a single Psych Tech education program in the Bay Area Region, located at Mission College in Santa Clara County. The program reported just 18 graduates in 2006 and 17 graduates in 2007, down from 30 graduates in 2005. With such small numbers, it takes only a small change in the number of any one group to dramatically shift the proportional composition. Instead of presenting a figure describing the proportional, racial/ethnic composition of graduates of the Psych Tech program at Mission College, Table 42 shows the actual number of graduates reported over the period 2005-2007.

Summary of Employment, Wage, and Education Data: Psychiatric Technician

The labor market data do not provide much information on employment conditions for Psychiatric Technicians in the Bay Area Region. Data available for the Bay Area Region indicate that the median wage for Psych Techs is roughly comparable in Santa Clara and Alameda/Contra Costa counties and that future employment opportunities will be very limited. In fact, the few job openings each year are expected to come entirely from the need to replace workers. The education data, as noted above, describe the single Psych Tech program in the region at Mission College. They show a declining number of graduates since 2000, with a sharper decline of women than men. These data also show that almost all of the students are Asian, White, or African American. There have not been any Native American graduates reported in the last three years and just one or two Latino graduates in each year. Given the regional employment outlook for Psych Techs, a single education program producing fewer than 20 graduates per year seems appropriate.

Master's Level Trained Mental Health Counseling and Mental Health Social Work Professionals

The data describing employment levels, employment-to-population ratios, wages, and employment projections for the selected mental health occupations refer to professionals trained at the master's degree level (or higher). The occupations themselves are grouped as either counselors or social workers and are then further classified according to the type and setting of service. Unfortunately, data are not readily available that can describe graduates

Table 43.
2007 Mental Health Counselor Estimated Employment and Employment per Population, and 2008 Median Annual Wage by County

County	Current Employment Estimates		
	Employment	Employment per 100,000 Population	Median Annual Wage
Alameda/Contra Costa	800	31	$40,747
Marin/San Francisco/San Mateo	620	34	$48,000
Santa Clara	350	19	$45,760

Source: California Employment Development Department, Labor Market Information Division

Table 44.
2004-2014 Mental Health Counselor Employment Projections by County

County	Projected Employment Estimates				
	Openings/ Year	Annual Growth Rate		Annual Turnover Rate	
		Mtl Health	Average	Mtl Health	Average
Alameda/Contra Costa	27	1.4%	0.9%	2.3%	2.3%
Marin/San Francisco/San Mateo	20	1.0%	0.8%		
Santa Clara	8	1.3%	1.0%		

Source: California Employment Development Department, Labor Market Information Division

of master's level programs in counseling or social work and the type of mental health services that they would be likely to provide or the setting in which they would provide the services. As a result, the correspondence between the mental health professions labor market and the educational program data is broad and indirect.

Given the lack of detailed data describing educational programs, the second best option is to look at graduates of master's and doctoral level programs in clinical and counseling psychology that have an explicit objective to train mental health professionals. We also looked at Master of Social Work (MSW) programs. We have organized the labor market data describing these occupations around the available education data. Labor market data describing workers in certain occupations who have likely received training in clinical and counseling psychology are paired with education data describing graduates of clinical and counseling psychology programs at the master's level. Likewise, labor market data describing occupations of workers who probably have received training in social work are paired with education data describing graduates of master's in social work programs.

MENTAL HEALTH COUNSELOR

Description: Mental Health Counselor

Mental Health Counselors work with individuals, families, and groups to address and treat mental and emotional disorders and to promote optimum mental health.

Employment growth for Mental Health Counselors is projected to occur at average to moderately above average rates in the region, but will be strongest in Alameda/ Contra Costa counties.

They are trained in a variety of therapeutic techniques used to address a wide range of issues including depression, addiction and substance abuse, suicidal impulses, stress management, problems with self-esteem; issues associated with aging, job and career concerns, educational decisions; issues related to mental and emotional health, as well as family, parenting, and marital or other relationship problems. Mental Health Counselors often work closely with other mental health specialists, such as Psychiatrists, Psychologists, Clinical Social Workers, Psychiatric Nurses, and School Counselors.

Employment and Wage Data: Mental Health Counselor

See Tables 43 and 44

SUBSTANCE ABUSE/BEHAVIORAL DISORDER COUNSELOR

Description: Substance Abuse/ Behavioral Disorder Counselor

Substance Abuse/Behavioral Disorder Counselors assist people who suffer from problems related to alcohol, drugs, gambling, and eating disorders. They counsel individuals facing addiction, helping them to identify underlying related behaviors. Counselors also conduct programs aimed at preventing addiction from occurring in the first place. Counseling sessions are designed for individuals, families, or groups.

Employment and Wage Data: Substance Abuse/Behavioral Disorder Counselor

See Tables 45 and 46

Table 45.
2007 Substance Abuse/Behavioral Disorder Counselors Estimated Employment and Employment per Population, and 2008 Median Annual Wage by County

County	Current Employment Estimates		
	Employment	Employment per 100,000 Population	Median Annual Wage
Alameda/Contra Costa	680	26	$32,885
Marin/San Francisco/San Mateo	840	46	$32,843
Santa Clara	290	16	$35,755

Source: California Employment Development Department, Labor Market Information Division

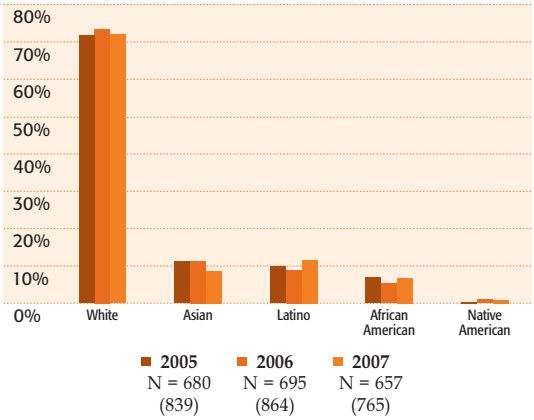
Table 46.
2004-2014 Substance Abuse/Behavioral Disorder Counselors Employment Projections by County

County	Projected Employment Estimates				
	Openings/ Year	Annual Growth Rate		Annual Turnover Rate	
		Sub Abuse Counselor	Average	Sub Abuse Counselor	Average
Alameda/Contra Costa	31	2.1%	0.9%	2.3%	2.3%
Marin/San Francisco/San Mateo	35	1.0%	0.8%		
Santa Clara	8	1.4%	1.0%		

Source: California Employment Development Department, Labor Market Information Division

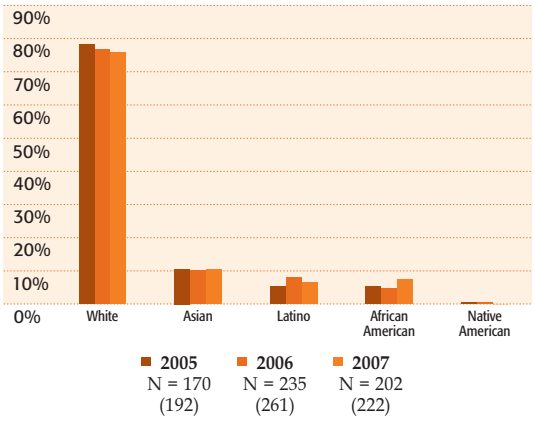
Education Data: Master's and Doctoral-Level Programs in Psychology; Associate Degree Programs in Substance Abuse/Addiction Counseling

Figure 20.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Master's Level Programs in Clinical or Counseling Psychology: Bay Area Region



Source: Integrated Postsecondary Education Data System (IPEDS)

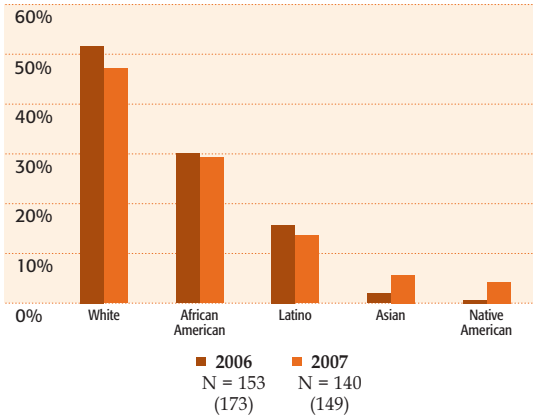
Figure 21.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Doctoral Level Programs in Clinical Psychology: Bay Area Region



Source: Integrated Postsecondary Education Data System (IPEDS)

Although the labor market data presented in Tables 43 though 46 technically describe mental health workers trained at the master's degree level or higher, there is also a mental health counselor workforce consisting of paraprofessionals trained at the associate's degree level. These occupations are most likely represented by much a much broader occupational group such as *Social and Human Service Assistants* and therefore cannot be uniquely identified in the available labor market data. However, there are education data that describe graduates of Substance Abuse/Addiction Counseling Programs who have been trained at the associate's degree level. These data are presented in Figure 22.

Figure 22.
2006–2007 Racial/Ethnic Composition of Graduates of Substance Abuse/Addiction Counseling Programs at the Associate's-Degree Level: Bay Area Region



Source: Integrated Postsecondary Education Data System (IPEDS)

Summary of Employment, Wage, and Education Data: Mental Health Counseling Professionals

Labor market data show that relative to the population, employment levels for Mental Health Counselors in Santa Clara County are substantially lower by comparison with the rest of the region. At the same time, the estimated median wage is comparatively lower in Alameda/Contra Costa counties

Overall, graduates of the region's master's and doctoral level programs in clinical or counseling psychology are mainly women and mainly White.

($5,000-$7,000 per year differential). It is not clear from these data alone, why this would be the case. Employment growth for Mental Health Counselors is projected to occur at average to moderately above average rates in the region, but will be strongest in Alameda/Contra Costa counties. Across the region, more job openings each year are expected to come from the need to replace workers, as opposed to industry growth.

The labor market data describing Substance Abuse/Behavioral Disorder Counselors also reveal regional differences in employment conditions and outlook. Although the estimated median wage is consistent across the region, relative to the population, there are two to three times as many Substance Abuse/Behavioral Disorder Counselors jobs in Marin/San Francisco/San Mateo counties compared with the rest of the region. Another key difference is that employment opportunities are projected to grow at roughly twice the average rate in Alameda/Contra Costa counties, and industry growth is expected to generate at least as many job opportunities as the need to replace workers. In contrast, employment growth is projected to be moderately above average in Santa Clara County and only average in Marin/San Francisco counties, and in both county groups most of the job opportunities are expected to come from the need to replace workers.

In comparing the employment conditions and outlook for Mental Health Counselors and Substance Abuse/Behavioral Counselors, there are a few data points that stand out. In Alameda/Contra Costa and Santa Clara counties, the employment per population ratio for these two occupations is roughly equal, whereas in Marin/San Francisco/San Mateo counties this ratio is substantially higher for Mental Health Counselors. As noted above, these labor market data identify a workforce trained at the master's degree level. However, there is a $5,000-$10,000 per year differential in the estimated median wage that favors Mental Health Counselors. Finally, the projected employment growth rate is roughly the same for both occupations in Marin/San Francisco/San Mateo counties and Santa Clara County, but in Alameda/Contra Costa counties the projected growth rate for Substance Abuse/Behavioral Counselors is much stronger.

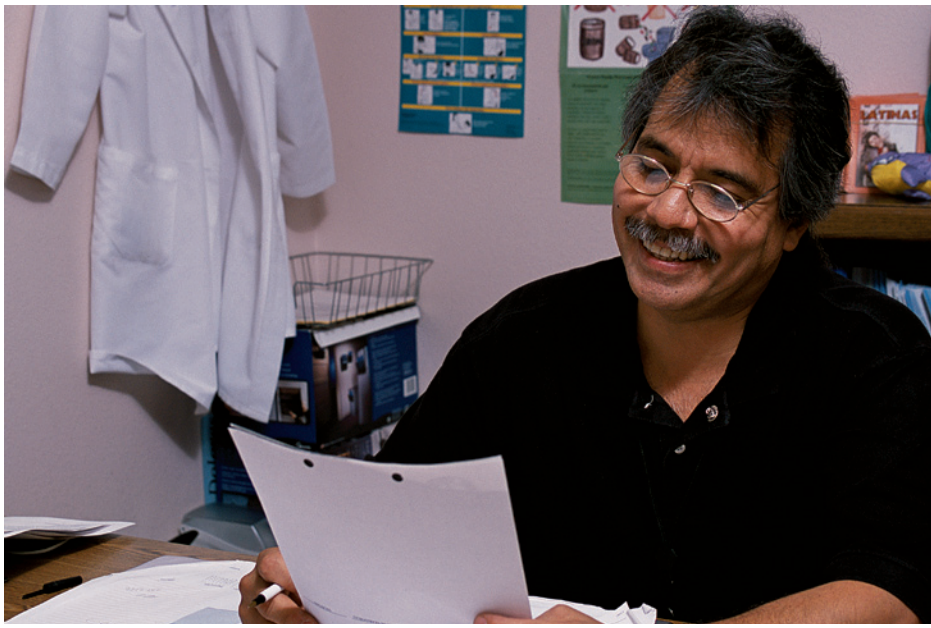
However, the caveat with respect to the limited coverage of these labor market data applies here. As noted, the data are less extensive for occupations that have a self-employment component. In this case, the annual number of job openings due to growth and turnover for Mental Health Counselors and Substances Abuse/Behavioral Disorder Counselors may be understated for those, primarily at the graduate level, who may be self-employed.

There are a dozen institutions in the Bay Area Region that offer master's or doctoral level training in psychology, some of which offer programs at multiple locations, but all of which offer programs that specifically train mental healthcare practitioners. Collectively, these programs produce 650-700 new master's graduates and roughly 200 new doctoral graduates each year. Many of the master's level programs in counseling psychology are focused on

training Marriage and Family Therapists (MFTs) and these students may represent a large share of master's level graduates. However, we do not know how many MFT graduates go to work in those parts of the mental healthcare delivery system that have trouble recruiting a qualified workforce.

Overall, graduates of the region's master's and doctoral level programs in clinical or counseling psychology are mainly women and mainly White. There is a small difference in the gender composition of graduates, comparing master's and doctoral level programs. Men represent a slightly larger share of the total number of graduates at the doctoral level (24% versus 19%). There is also a small difference in the racial/ethnic composition of graduates, comparing master's and doctoral level programs. White students represent a larger share of doctoral level programs (77% versus 72%), while Latino students are better represented in master's programs (12% of master's versus 6% of doctoral programs).

The small decline in the number of reported graduates from the region's master's level counseling psychology programs is most likely the result of underreporting. The California Institute of Integral Studies (CIIS) reported between 85 and 90 graduates in both 2005 and 2006, but did not report any graduates in 2007. It is not known how the 2007 racial/ethnic profile of graduates would be affected if these data were available.[47] John F. Kennedy University, which has multiple campuses around the Bay Area Region, is scheduled to begin offering a master's level counseling psychology program in the fall of 2008, focused on training mental health professionals to work specifically in the Latino community.



In addition to master's and doctoral level programs in clinical and counseling psychology, there are five regional community colleges that offer a Substance Abuse Counseling program at the associate's degree level, and they produce 150-175 total graduates per year. In comparison with the region's master's and doctoral level programs in Counseling or Clinical Psychology, men form a large proportion of the graduates at roughly 35%. Students in these associate degree programs are more racially/ethnically diverse. African American students represent 30% of the total number of graduates, and although White students represent roughly 50%, this is low compared with approximately 70% of master's programs and 75% of doctoral programs in Counseling or Clinical Psychology.

47 In both years that CIIS reported graduates of its master's level counseling psychology program, the race/ethnicity of anywhere from one-third to one-half of the roughly 90 graduates was reported as "unknown".

Other potential sources of training for entry-level paraprofessionals working in areas of mental/behavioral health counseling are the region's community colleges that award associate degrees in Human Services. Programs in Human Services typically offer concentrations in several areas, including mental/behavioral health counseling. Available data indicate that students in the Human Services programs in the region's community colleges are racially/ethnically diverse (White students represent only 30-35% of graduates). However, these student data are too broad to offer any indication of whether, or how many, graduates have received training that would likely lead to employment in fields of mental health.

MENTAL HEALTH/SUBSTANCE ABUSE SOCIAL WORKER

Description: Mental Health/ Substance Abuse Social Worker

Mental Health/Substance Abuse Social Workers are a subset of the general social work professions. These professionals focus on assessing and treating individuals with mental illness or substance abuse problems, including abuse of alcohol, tobacco, or other drugs. Such services include individual and group therapy, outreach, crisis intervention, social rehabilitation, and training patients in skills of everyday living. These workers also may help plan for supportive services to ease patients' return to the community. Mental Health/Substance Abuse Social Workers are likely to work in hospitals, substance abuse treatment centers,

Table 47.
2007 Mental Health/Substance Abuse Social Worker Estimated Employment and Employment per Population, and 2008 Median Annual Wage by County

County	Current Employment Estimates		
	Employment	Employment per 100,000 Population	Median Annual Wage
Alameda/Contra Costa	530	21	$42,016
Marin/San Francisco/San Mateo	940	52	$39,936
Santa Clara	1340	74	$43,347

Source: California Employment Development Department, Labor Market Information Division

Table 48.
2004-2014 Mental Health/Substance Abuse Social Worker Employment Projections by County

County	Projected Employment Estimates				
	Openings/ Year	Annual Growth Rate		Annual Turnover Rate	
		Mtl Hlth Soc Wkr	Average	Mtl Hlth Soc Wkr	Average
Alameda/Contra Costa	24	2.0%	0.9%	1.7%	2.3%
Marin/San Francisco/San Mateo	33	1.0%	0.8%		
Santa Clara	16	1.3%	1.0%		

Source: California Employment Development Department, Labor Market Information Division

individual and family services agencies, or local government. These social workers may also be known as Clinical Social Workers.

Employment and Wage Data: Mental Health/Substance Abuse Social Worker

See Tables 47 and 48

MEDICAL/PUBLIC HEALTH SOCIAL WORKER

Description: Medical/Public Health Social Worker

Medical/Public Health Social Workers are typically trained at the master's level and work to provide individuals, families, or vulnerable populations with the psychosocial support needed to cope with chronic, acute, or terminal illnesses such as Alzheimer's disease, cancer, and AIDS. They also advise family caregivers, counsel patients, and help plan for patients' needs after discharge by arranging for at-home services ranging from Meals On Wheels to oxygen equipment. They are involved with some work on interdisciplinary teams that evaluate certain kinds of patients, such as geriatric or organ transplant patients. Medical/Public Health Social Workers may work for hospitals, nursing and personal care facilities, individual and family services agencies, or local governments. This unique group of workers may be trained in either social work or public health.

Table 49.
2007 Medical/Public Health Social Worker Estimated Employment and Employment per Population, and 2008 Median Annual Wage by County

County	Current Employment Estimates		
	Employment	Employment per 100,000 Population	Median Annual Wage
Alameda/Contra Costa	1550	60	$57,949
Marin/San Francisco/San Mateo	730	40	$63,523
Santa Clara	650	36	$58,906

Source: California Employment Development Department, Labor Market Information Division

Table 50.
2004-2014 Medical/Public Health Social Worker Employment Projections by County

County	Projected Employment Estimates				
	Openings/ Year	Annual Growth Rate		Annual Turnover Rate	
		Med/Pub Hlth Wrkr	Average	Med/Pub Hlth Wrkr	Average
Alameda/Contra Costa	33	1.2%	0.9%	1.7%	2.3%
Marin/San Francisco/San Mateo	17	1.0%	0.8%		
Santa Clara	12	1.2%	1.0%		

Source: California Employment Development Department, Labor Market Information Division

Employment and Wage Data: Medical/ Public Health Social Worker

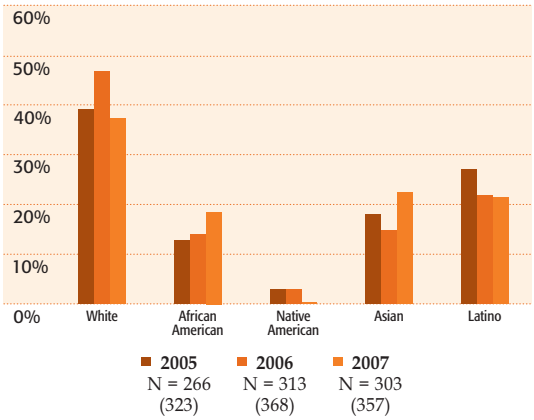
See Tables 49 and 50

GERIATRIC SOCIAL WORKER

One of the segments of the workforce that will play a critical role during the coming decade will be social workers who specialize in the field of geriatrics and aging. Unfortunately, data describing these professionals in California is very limited. On the labor market side, there is no good way to distinguish these social workers from others. We were only able to find one report, which is national in scope[48] and reports that approximately 9% of licensed social workers practice in the area of geriatrics or aging. Education data describing the racial/ethnic composition of Master of Social Work (MSW) graduates are presented below in Figure 23.

Education Data: Master of Social Work

Figure 23.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Master of Social Work Programs: Bay Area Region



Source: Integrated Postsecondary Education Data System (IPEDS)

Summary of Employment, Wage, and Education Data: Master's Level Mental Health Social Work Professionals

The data describing employment conditions for Mental Health Social Workers in the region show a much larger employment per population ratio in Santa Clara County compared with the rest of the region; in fact, it is more than three times its size in Alameda/Contra Costa counties. Despite the wide variance in this measure, the estimated median wage is comparable across the region. The employment outlook for Mental Health Social Workers across the region mirrors that of Substance Abuse/Behavioral Disorder Counselors: in Alameda/Contra Costa counties, employment opportunities are projected to grow at roughly twice the average rate; in the rest of the region slightly above average growth is projected. In addition, industry growth is expected to generate at least as many job opportunities as the need to replace workers in Alameda/Contra Costa counties; in the rest of the region, replacement needs are expected to be the source of more than half of all new job openings.

Medical/Public Health Social Workers are the most highly paid of the counseling and social work occupations analyzed in this report. In each county group, the estimated median wage for Medical/Public Health Social Workers is roughly $15,000/year higher than the next highest paid counseling or social work occupation (Mental Health Counselor in Marin/San Francisco/ San Mateo counties and Mental Health/ Substance Abuse Social Worker in Alameda/ Contra Costa counties). These labor market data show a $4,000-$5,000/year median wage

48 *Licensed Social Workers in the U.S., 2004*. Center for Health Workforce Studies, School of Public Health, University of Albany.

differential for Medical/Public Health Social Workers in the region (wages are highest in Marin/San Francisco/San Mateo counties). And the employment per population ratios indicate that there are many more Medical/Public Health Social Worker jobs in Alameda/Contra Costa counties compared with the rest of the region. Despite these differences in current employment conditions, the employment outlook is consistent across the region. Employment opportunity is projected to grow at a slightly above average rate and more job openings will come from the need to replace workers as opposed to industry growth.

We presume that the major sources of formally trained mental health social work professionals are the region's Master of Social Work (MSW) programs. There are four MSW programs in the Bay Area Region: one at UC Berkeley and three in the Cal State system (CSU East Bay, San Jose State, and San Francisco State). Collectively they produce 325-350 new graduates each year. The program at San Jose State is the largest (in terms of number of graduates, well over 100 per year); the other three programs are comparable in size (roughly 80 new graduates each year). Approximately, 80-85% of the region's MSW graduates are women, but their racial/ethnic composition is much more diverse. In particular, African American students are very well represented in the region's MSW programs. The 2007 racial/ethnic profile of MSW graduates comes closest to reflecting that of the region's general population.

Although quantitative information describing the state of geriatric social work education is not readily available, there is a growing effort to promote expertise in geriatrics and aging in social work education and practice. The Council on Social Work Education has sponsored the Geriatric Social Work Initiative,[49] which is a multifaceted effort meant to prepare an aging-savvy social work workforce. In California, this initiative was responsible for several major grants awarded to the state's schools of social work in order to develop practicum partnerships between schools and public and private agencies, as well as to develop the curriculum to train the state's future geriatric social work workforce.

The grants made possible by this initiative, as well as the work accomplished through these grants, have served as the basis for the California Social Work Education Center (CalSWEC) Aging Initiative: Aging Competencies.[50] CalSWEC, whose main office is housed at UC Berkeley, is a statewide coalition represented by leaders in social work education and practitioners from both the public and private sectors.[51] Its aging competencies initiative is focused on developing a curriculum in social work education that will effectively train aging specialists, who will provide high quality geriatric services within the network of health, mental health, and social services.

Among the key competencies this curriculum initiative seeks to instill are those that recognize the importance of cultural diversity, social and economic disadvantage, and the value of culturally competent social work.

Approximately 80-85% of the region's MSW graduates are women, but their racial/ethnic composition is much more diverse.

49 More information can be found at http://www.gswi.org/

50 More information can be found at http://calswec.berkeley.edu/CalSWEC/Aging_About.html

51 It brings together California's 19 accredited social work graduate programs, the state's 58 county departments of social services and mental health, the California Department of Social Services, and the state's chapter of the National Association of Social Workers.

Other potential sources of training for entry-level paraprofessionals working in areas of geriatric social work are the region's community colleges that award associate degrees in Human Services. Programs in Human Services typically offer concentrations in several areas, including gerontology. As noted above, available data indicate that students in the Human Services programs in the region's community colleges are racially/ethnically diverse (White students represent only 30-35% of graduates), though these student data are too broad to offer any indication of whether, or how many graduates have received training that would likely lead to employment in fields of geriatric social work.

Public and Community Health Professionals

In the section describing mental health professionals, we noted the difficulty in matching labor market data with education program data. This same difficulty pertains to the public/community health occupations targeted for analysis. Again, this means that we are only able to broadly describe labor market conditions and educational training programs for the selected public/community health occupations. The selected occupations include Public/Community Health Educators and Medical/Public Health Social Workers. Data describing employment conditions for Medical/Public Health Social Workers was presented previously. Data describing employment conditions for Public/Community Health Educators is presented below.

Public/Community Health Educators are most likely trained in formal public health programs at the bachelor's, master's, and doctoral levels. It is not precisely clear whether Medical/Public Health Social Workers are trained in Master of Public Health (MPH) programs or Master of Social Work (MSW) programs. They may be trained in both types of programs in some cases. Education data describing MSW programs was presented previously. Education data describing formal programs in public health are presented below. The data indicate that UC Berkeley is by far the region's largest supplier of students formally trained in public health. It offers the region's lone public health program at the bachelor's level and its graduate level programs are considered some of the best in the country. The education data are limited by being overly broad and thereby obscuring the variety of public/community health occupations in which graduates may by employed. They do not include the kind of detail that would help indicate the type of public/community health services that graduates would be likely to provide or the setting in which they would provide such services.

PUBLIC/COMMUNITY HEALTH EDUCATOR

Description: Public/Community Health Educator

These are bachelor's and master's level trained professionals who work to promote, maintain, and improve individual and community health by assisting individuals and communities to adopt healthy behaviors. They collect and analyze data to identify community

Table 51.
2007 Public/Community Health Educator Estimated Employment and Employment per Population, and 2008 Median Annual Wage by County

County	Current Employment Estimates		
	Employment	Employment per 100,000 Population	Median Annual Wage
Alameda/Contra Costa	910	35	$49,213
Marin/San Francisco/San Mateo	1000	55	$73,216
Santa Clara	550	30	$49,109

Source: California Employment Development Department, Labor Market Information Division

Table 52.
2004-2014 Public/Community Health Educator Employment Projections by County

County	Projected Employment Estimates				
	Openings/ Year	Annual Growth Rate		Annual Turnover Rate	
		Hlth Educ	Average	Hlth Educ	Average
Alameda/Contra Costa	18	1.1%	0.9%	1.8%	2.3%
Marin/San Francisco/San Mateo	22	0.8%	0.8%		
Santa Clara	9	1.4%	1.0%		

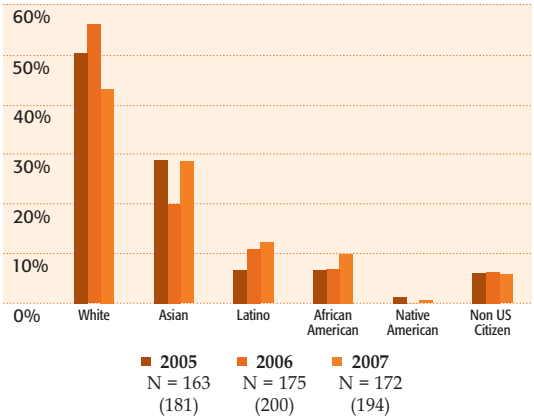
Source: California Employment Development Department, Labor Market Information Division

needs prior to planning, implementing, monitoring, and evaluating programs designed to encourage healthy lifestyles, policies, and environments. They may also serve as a resource to assist individuals, other professionals, or the community. In addition, they may administer fiscal resources for health education programs.

Employment, Wage, and Education Data: Public/ Community Health Educator

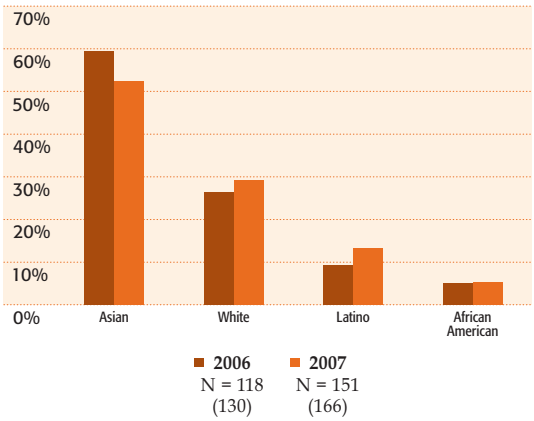
See Tables 51 and 52

Figure 24.
2005–2007 Racial/Ethnic Composition for Reported Graduates of Master of Public Health Programs: Bay Area Region



Source: Integrated Postsecondary Education Data System (IPEDS)

Figure 25.
2006–2007 Racial/Ethnic Composition for Reported Graduates of Public Health Programs at the Bachelor's Level: Bay Area Region



Source: Integrated Postsecondary Education Data System (IPEDS)

Summary of Employment, Wage, and Education Data: Public/ Community Health Educator

Labor market data show significant regional differences in current employment conditions for Public/Community Health Educators. The employment per population ratio is considerably larger and the estimated median wage in considerably higher in Marin/San Francisco/San Mateo counties compared with the rest of the region. These data show a nearly $25,000 per year median wage differential favoring Public/ Community Health Educators in Marin/ San Francisco/San Mateo counties. One possibility for the difference in wages may be that the Public/Community Health Educator workforce in Marin/San Francisco/San Mateo counties has a different educational and experience profile, or that the type of work and workplace setting are different. It is also possible that this finding is an artifact of the survey – a difference resulting from the way in which the data were collected. Despite these differences, the employment outlook is consistent across the region. Job opportunities are projected to grow at an average or slightly above average rate, and more of these opportunities will come from the need to replace workers than from industry growth.

Three schools in the Bay Area Region have master's level formal public health programs: UC Berkeley, San Jose State University, and San Francisco State University. Of the roughly 190 new graduates produced by these programs each year, UC Berkeley accounts for approximately 80%.[52] Roughly 75-80% of graduates are women; this proportion is consistent at all three schools. The fact that UC Berkeley accounts for such a large share of the formally-trained public health graduates produced by the region's three programs means that the overall racial/ethnic profile of the region's public health program graduates looks similar to UC Berkeley's. However, students at UC Berkeley are predominantly White (45-50%) and Asian (25%); the two other, much smaller programs are comparatively racially/ethnically diverse.

As noted, the region's only formal public health program at the bachelor's level is at UC Berkeley. The gender and racial/ ethnic profile of its graduates differs from its MPH graduates only in that the concentration of Asian and White students is even more pronounced (80-85%) and it is Asians who represent the largest share of total graduates (50-60%). Other sources of formal public health workers may be graduates of bachelor's level Health Sciences degree programs in the region's California State University institutions

52 UC Berkeley graduates 150-160 students each year, San Francisco State 15-20 per year, and San Jose State 20-30 per year.

(CSU East Bay, San Jose State University, and San Francisco State University), as well as Human Services degree programs at the region's California community colleges. Both of these types of degree programs frequently offer training options that could lead to employment in fields of public health. Unfortunately, student data are not reported in a way that allows us to quantify and describe this part of the supply chain.

COMMUNITY HEALTH WORKER AND HEALTH CARE INTERPRETER

Community Health Workers (CHWs) are not identified by available labor market data.[53] A recent national study[54] of Community Health Workers, which used data from the 2000 Census, estimated that there were between 5,000 and 7,000 paid CHWs and another 3,000 volunteer CHWs in California. The accuracy of these estimates has not been established. There are no consistent data describing wages for CHWs in California, but some local departments of public health employ a formal classification for Community Health Workers. We found such classifications exist within the county health departments for all counties in the Bay Area Region, except Marin County (although that does not mean that CHWs are not employed in Marin County).

Within county public health departments, the Community Health Worker classification is typically an "occupational series", which means that there is a stepwise pattern for advancement. For example, in San Francisco County four classes of Community Health Worker correspond with increasing levels of responsibility (and earnings). The entry-level wage is approximately $40,000 per year, but the most experienced CHWs may earn as much as $67,000 per year.[55] For employment in San Francisco County, the minimum qualifications for an entry-level position include evidence of experience working with culturally diverse populations in the context of providing community services, as well as some bilingual ability. However, possession of a "Community Health Worker Certificate" from City College of San Francisco is also recognized as a partial substitute for experience. According to the various county human resource departments, the entry-level wage for a CHW was within the range of $37,000-$40,000 per year. The single exception was in Contra Costa County where the entry-level salary was listed at just over $32,000 per year).

Community Health Worker is an emerging occupation, and its job tasks and responsibilities vary depending on the workplace setting. Community Health Workers typically function as part of a public health strategy to increase health care access for underserved communities, including limited-English speakers, new immigrant populations, and the low-income population. CHW responsibilities may include educating clients about available community resources; disseminating information about health and lifestyle behaviors; advocating for community health needs; providing direct, basic health care procedures (first aid, blood pressure); and providing feedback to healthcare systems to improve service accessibility. Although it is difficult to assess the demand and supply of CHWs, regional workforce planners should expect growth in this field, particularly to care for the

53 The Office of Management and Budget (OMB) is considering creating a new Standard Occupation Classification (SOC) code for Community Health Worker, which would provide standardized and regular data collection on this workforce.

54 U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, *Community Health Worker National Workforce Study*, March 2007.

55 The range of potential CHW wages within a county varied across the region. The entry-level wage, however, was consistent with the exception of Contra Costa where it was $6,000-$8,000 per year lower.

growing number of uninsured expected to access care in community settings.

Data describing the demographic profile of CHWs in California are not available. The recent national study cited above found that women represented roughly 80% of the national CHW workforce and that the racial/ethnic composition of the national CHW workforce was comparatively diverse:

White not Hispanic (39%), Latino (35%), African American (16%), Native American (5%), and Asian/Pacific Islander (5%). CHW education and training are often conducted on the job, as illustrated by the stepwise career ladders within county health departments. There is an emerging framework to provide formal training of Community Health Workers in California's higher education institutions; currently there are very few programs that actually offer a CHW degree or certificate. Community Health Works, which is based in the San Francisco Bay Area, recently received a federal grant to establish a national model for an undergraduate program in community health. The concept is to develop a curriculum that will lead to a bachelor's degree in community health, which can then be used to establish undergraduate programs at college campuses across California and the rest of the nation. In the Bay Area Region, there are at least two formal Community Health Worker training programs:

- City College of San Francisco (San Francisco County).
- Mission College (Santa Clara County).

However, there are no student data reported that would allow us to quantify or describe graduates of these programs. The region's community colleges that offer a Human Services degree would also be a source of formally trained Community Health Workers. Again, student data are not reported in a way that would allow us to say how many and whether graduates of these programs have been trained to work in community health.

Health Care Interpreters also are not identified by the available labor market data. A 2003 study of this workforce in California cited a claim by the California Healthcare Interpreters Association (CHIA) that there were probably fewer than 500 professional Health Care Interpreters working in the state at that time, and only a fraction of that workforce had been formally trained and was working full-time as an interpreter.[56] This same study cited an hourly mean wage of

56 C. Dower, *Health Care Interpreters in California*, Center for the Health Professions, University of California San Francisco, 2003.

roughly $16 per hour, but it emphasized that "independent interpreters with outstanding credentials may command relatively high salaries,"[57] as much as $100 per hour.

We did not find formal job classification information for Health Care Interpreters with any of the region's county health departments. This information may be available from personnel departments within the region's hospitals and healthcare providers and could possibly be used to generate descriptive information on employment conditions within the region. Unfortunately, there are no data to describe the demographic profile of this workforce, but since the essential job function is the ability to speak a non-English language, it is probably racially and ethnically diverse.

Health Care Interpreter is an emerging occupation, and its job tasks and responsibilities vary depending on the workplace setting. Generally, the role of the Health Care Interpreter is to serve as a conduit of information exchanged between medical staff and non-English-speaking patients. The interpreter's specific responsibilities may include assuring that information pertaining to the patient's outpatient services and/or hospitalization is accurately communicated, seeing that the patient's questions and concerns regarding this information are appropriately addressed and documented, and providing interpreter services that convey the exact message rather than summarize the information in a way that is subjective. There has been recent legislation and policy mandating the use of trained health interpreters. Regional workforce planners should assess regional demand and supply for this expected increase in the field of health care interpreting.

As is the situation with Community Health Workers, there are no data available to describe recipients who receive formal training as Health Care Interpreters. According to the 2003 study cited above, the duration of formal programs ranges from 30 hours to more than 600 hours, but these programs most commonly are 40 hours in length. They typically cover roles and ethics, basic interpreting techniques, health and medical terminology, and the role of cultural values in the experience of health care. Hospitals and healthcare providers within the region may offer Health Care Interpreter training, whether developed in-house or through a proprietary training such as *Connecting Worlds*.[58] We were able to identify several formal Health Care Interpreter programs in the Bay Area Region:

- City College of San Francisco (San Francisco County).
- National Hispanic University (Santa Clara County) offers a Translator/ Interpreter certificate program with coursework in medical terminology.
- Asian Health Services[59] (Alameda County) offers a 57-hour training program utilizing the *Connecting Worlds* curriculum.

There has been recent legislation and policy mandating the use of trained health interpreters. Regional workforce planners should assess regional demand and supply for this expected increase in the field of healthcare interpreting.

57 Ibid.

58 For more information see: http://www.palsforhealth.org/interptraining.htm

59 Asian Health Services is comprehensive community health center that serves the Asian and Pacific Islander populations of Alameda County.

Healthcare jobs creation will also be driven by the need to replace workers. In some entry-level occupations, such as nursing assistant, turnover rates have been reported to be as high as 90% per year.

Conclusion

The purpose of this report is to help workforce professionals and policymakers engage in a strategic effort to develop the Bay Area Region's allied health workforce. The report provides basic data describing key components of such an effort: the region's population (and potential pool of labor); the broader, current health professions workforce; and recent graduates of regional health professions education programs, who represent new entrants into the workforce. The overarching framework of the analysis presented concerns the racial and ethnic composition of these groups and the workforce implications of this composition. These data are meant to facilitate discussion and planning to address issues of job demand and education capacity. The population data inform planning for other workforce preparation such as ESL training and college readiness.

The Bay Area Region's current population of just under six million people is projected to grow by about 1.25 million over the next 25 years. Nearly 90% of this growth is projected for three counties: Santa Clara County (34% of total projected growth), Contra Costa County (31% of total projected growth), and Alameda County (23% of total projected growth). As is true across California, most of the Bay Area Region's population growth is projected to result from growth in the Latino population (58% of total projected growth) and Asian population growth (30% of total projected growth).

The aging population phenomenon, occurring across the nation and the state of California, will of course affect the Bay Area Region as well. The regional population over the age of 65 is expected to more than double from roughly 700,000 in 2005 to 1.5 million in 2030. One of the concerns over this demographic shift is how this growth, when combined with growth of the very youngest segments of the population, will impact the workforce. It is likely to change the mix and type of human resources needed to care for the dependent population, including the need for allied health workers to provide services in acute and long-term care settings and in the home.

Other factors expected to drive healthcare job creation include emerging medical technologies, regulatory shifts in scope of practice, as well as changes in healthcare delivery setting (away from institutional-based care and into outpatient and home-based settings). Healthcare job creation will also be driven by the need to replace workers. In some entry-level occupations, such as nursing assistant, turnover rates have been reported to be as high as 90% per year.

Regional workforce planning groups should use these data to address differing allied health workforce needs across settings. For example, hospitals may be more concerned about increasing the supply of Respiratory Therapists and Imaging Technologists. Long term care settings have a need for home health aides and nursing assistants while community clinics may be looking to hire more medical assistants.

Allied health occupations will offer a great deal of opportunity for employment in the region. The greatest number of

opportunities will come in the form of entry-level occupations that are near the bottom of the wage scale.

However, there are also mid-level occupations that have a strong employment outlook. These occupations typically require as associate's degree or completion of a two-year certificate program. The challenge in developing a more diverse allied healthcare workforce will be to attract Latino, African American, Native American, and underrepresented Asian groups into higher-level education programs where the data suggest they are underrepresented. Males are also an underrepresented group in most of the selected allied health occupations. A continuing effort is needed to recruit students into the region's associate degree education programs and assist entry-level incumbent workers to advance along established career ladders that lead to occupations involving greater decision-making, greater responsibility, and higher wages.

Unfortunately, there are no readily available sources describing career ladder programs, neither where they are located, which career paths they serve, nor the extent to which they are accessed by workers. Often, career ladder programs develop within a regional partnership of educators and providers. There is a need for more standardization of pathways and requirements in order to make career ladders a reality for the vast numbers of low-wage, entry-level healthcare workers.

Increasing awareness about the opportunities in allied health occupations should also be a focus of regional planning. The younger population need to be aware of and prepared to enter allied health workforce occupations. Although we do not present data specific to the Bay Area Region, there is a growing "achievement gap" among high school graduates in the state that correlates with race, ethnicity, and income.[60] Results from the 2006 California Standards Test show that Latino and African American high school students are significantly less successful in both language arts and mathematics compared with their White and Asian peers, even after controlling for socio-economic disadvantages.[61] Other working age adults could be a source for allied health education and training programs. Needed entry-level skills and certain proficiency requirements present challenges in some parts of the Bay Area Region where English proficiency and other skills may be lacking.

Partners in increasing awareness should include high schools, employers, community colleges, universities, and community groups. "Intermediary networks" can play an important role. Intermediary networks are cross-institutional relationships (networks) that coordinate the expertise and resources of educational entities, workforce development professionals and youth development organizations, social services agencies, local industry representatives and other key stakeholders to address a range of workforce issues. These issues include high school drop-out rates; out-of-school and at-risk youth populations in need of career counseling; connecting youth populations with career options and helping develop the requisite skills set; and effectively pooling and exploiting resources available to carry out the mission to address these issues.

There is a need for more standardization of pathways and requirements in order to make career ladder a relative for the vast numbers of low-wage, entry-level healthcare workers.

60 It is our assumption that these differences exist among high school students in the Bay Area Region as well.

61 Achievement Gap Fact Sheet: http://www.cde.ca.gov/eo/in/se/agfactsheet.asp

Increasing awareness about the opportunities in allied health occupations should also be a focus of regional planning. The younger population need to be aware of and prepared to enter allied health workforce occupations.

Jobs for Youth (operated by the United Way of the Bay Area) is one example of a local intermediary network.[62] *Jobs For Youth* offers a range of services designed to help connect qualified youth in the Bay Area with entry-level employment in the private sector, using a collective framework that engages public, private, and not-for-profit resources. Because of its cross-sector orientation, it also functions as information exchange, helping institutions, agencies, and organizations stay connected and aware of each other's evolving needs.

Jewish Vocational Services (JVS) in San Francisco also functions as an intermediary, offering a range of services and programs aimed at workforce development.[63] A major part of the JVS mission is to serve communities that experience barriers to employment. For example, JVS played a key role in the formation of the Transgender Economic Empowerment Initiative in San Francisco, which seeks to connect job seekers in the transgender community with employers committed to workforce diversity. It is widely held as the first public/private venture to address the economic development in the transgender community. JVS operates programs that provide training and employment services to high school students with disabilities, in both public and non-public high schools. Among the portfolio of workforce development programs operated by JVS are allied healthcare occupational training programs. These include refresher courses for foreign-born nurses designed to update skill sets and provide requisite coursework to sit for licensing examinations, and a Vocational English as a Second Language (VESL) course for medical professionals that focuses on English language skills in the healthcare setting.

Another example of an intermediary in the Bay Area Region is *Community Health Works*, which is a partnership between San Francisco State University and City College of San Francisco.[64] The mission of *Community Health Works* is to eliminate health inequalities and to diversify the public health and primary care workforce through training, applied research and advocacy. One of the principal means of achieving this mission is to act as a bridge across different sectors of the healthcare system and health professions workforce. Since its inception in 1992, the organization has been at the forefront of developing training programs for emerging allied health occupations, including Community Health Workers and Health Care Interpreters. *Community Health Works* has also been a key supporter of efforts to utilize foreign-trained healthcare professionals into the Bay Area Region's health professions workforce through efforts such as the *Welcome Back: International Health Worker Assistance Center*.

The *Bay Area Workforce Funding Collaborative* (BAWFC) is public/private partnership that also functions as a workforce intermediary.[65] It is a network of more than a dozen Bay Area philanthropic organizations working with the California Employment Development Department to leverage funding resources and educational and industry expertise to create opportunities for disadvantaged adults and transition-age youth (ages 18-24) while developing the skilled workforce that regional employers

62 More information can be found here: http://www.uwba.org/matters/jobsforyouth/jobsforyouth.php

63 More information can be found here: http://www.jvs.org/Programs.htm

64 More information can be found here: http://www.communityhealthworks.org/

65 More information can be found here: http://www.sff.org/programs/community-development/bawfc

are seeking. The funding approach of the BAWFC is to focus on specific industrial sectors. It is currently investing in projects aimed at developing the workforce for the region's healthcare and life sciences sectors.

Access to allied health occupations training is widespread in the Bay Area Region. At the entry-level, educational opportunities are often available through career education programs administered by county school districts, including Adult Schools and Regional Occupational Programs (ROP). We identified more than 40 entry-level allied healthcare occupations training programs in the six-county Bay Area Region offered by either an Adult School or an ROP. Specific training programs are developed and maintained according to local business needs, which means that there is a certain amount of "churning" from year to year; a Pharmacy Technician training program available in one year may not be offered in the following year if local industry needs have shifted. Unfortunately, there are no readily available data describing either the total number, or the gender and racial/ethnic profile of students who are trained in these programs. In addition to the region's ROPs, Adult Schools, and community colleges, there are a growing number of private schools offering entry-level allied health education programs. Private schools providing entry-level training may offer greater program flexibility and easier access, as well better career development support compared with regional ROPs, Adult Schools, and community colleges. However, this may come at greater financial cost for the student. A single year of education in a private, for-profit institution may cost in excess of $20,000 per year, compared with the roughly $1,200 per year it costs to attend a California community college.

Regional workforce planners should develop a better understanding of the private schools' role in regional education. .A better understanding of how and why private, for-profit institutions have come to dominate the market for entry-level health occupations training may help in the development of less costly alternatives. In any case, increasing tuition assistance and loans should be considered as part of any regional workforce plan.

In summary, this report should serve to facilitate a broad discussion of healthcare workforce development for those new to the field and an updated benchmark for those long familiar with the complex of issues that attend workforce planning. As the community ages and the demand for allied health workers increases, there is an urgent need to conduct short and long term regional workforce planning. Certainly, more and improved data would help to describe the health professions workforce and health professions student bodies at the regional level. However, this report provides a rich set of information to support the process of allied health workforce development in the Bay Area Region.

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Appendix A.

Detailed Listing of Occupations Used in This Report by Standard Occupation Classification

SOC 21-1000: Community and Social Service Counselors, Social Workers and Specialists

- Substance Abuse and Behavioral Disorder Counselors
- Educational, Vocational, and School Counselors
- Marriage and Family Therapists
- Mental Health Counselors
- Rehabilitation Counselors
- Child, Family and School Social Workers
- Medical and Public Health Social Workers
- Mental Health and Substance Abuse Social Workers
- Health Educators
- Social and Human Service Assistants

SOC 29-1000: Health Diagnosing and Treating Practitioners

- Chiropractors
- Dentists
- Dietitians and Nutritionists
- Optometrists
- Pharmacists
- Physicians and Surgeons
- Physician Assistants
- Podiatrists
- Registered Nurses
- Audiologists
- Occupational Therapists
- Physical Therapists
- Radiation Therapists
- Recreational Therapists
- Respiratory Therapists
- Speech-Language Therapists

SOC 29-2000: Health Technologists and Technicians

- Medical and Clinical Laboratory Technologists
- Medical and Clinical Laboratory Technicians
- Dental Hygienists
- Cardiovascular Technologists and Technicians
- Diagnostic Medical Sonographers
- Nuclear Medicine Technologists
- Radiologic Technologists and Technicians
- Emergency Medical Technicians and Paramedics
- Dietetic Technicians
- Pharmacy Technicians
- Psychiatric Technicians
- Respiratory Therapy Technicians
- Surgical Technologists
- Licensed Vocational/Practical Nurses
- Medical Records and Health Information Technicians
- Opticians, Dispensing

SOC 31-0000: Healthcare Support Occupations

- Home Health Aides
- Nursing Aides, Orderlies and Attendants
- Psychiatric Aides
- Occupational Therapist Assistants and Aides
- Physical Therapist Assistants and Aides
- Dental Assistants
- Medical Assistants
- Pharmacy Aides

Appendix B.
2005/2006 Median Age by Selected Asian Group: Bay Area Region

Selected Asian Group	Median Age
Japanese	45
Chinese	40
Filipino	38
Thai	37
Vietnamese	36
Korean	35
Laotian	31
Asian Indian	31
Cambodian	30

Source: Combined 2005 and 2006 American Community Survey PUMS for California

Appendix C.
2005/2006 Bay Area Region Foreign-born Population Countries of Birth by Geographic Region: East Asia and Latin America

Geographic Region	Countries Represented by Bay Area Foreign-Born Population
East Asia	Cambodia, China, Hong Kong, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, Nepal, Philippines, Singapore, Taiwan, Thailand, Vietnam
Latin America	Argentina, Belize, Bolivia, Brazil, Chile, Columbia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, Venezuela

Source: Combined 2005 and 2006 American Community Survey PUMS for California

Appendix D1.
Marin/San Francisco/San Mateo Counties: 2006 Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by Occupation

Occupation	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year	Annual Growth Rate (%)
Dental Assistant	2350	130	$39,686	92	1.0%
Dental Hygienist	1190	66	$109,366	20	2.4%
Medical Assistant	2740	152	$38,043	76	2.3%
Pharmacy Technician	1500	83	$41,392	37	1.9%
Home Health Aide	2540	140	$22,402	133	3.7%
Nursing Aide	5650	312	$35,859	118	0.9%
Licensed Vocational Nurse	2970	164	$58,522	66	0.4%
Nurse Practitioner (Registered Nurse)	–	–	–	–	–
Physician Assistant	270	15	$84,864	9	2.7%
Respiratory Therapist	440	24	$62,130	28	2.2%
Radiologic Technologist	830	46	$64,314	27	1.5%
Clinical Laboratory Scientist	670	37	$72,675	38	1.4%
EMT/Paramedic*	410	23	$31,304/ $54,371	5	0.8%
Psychiatric Technician	–	–	–	2	0%
Mental Health Counselor	620	34	$48,000	20	1.0%
Mental Health and Substance Abuse Social Worker	940	52	$39,936	33	1.0%
Substance Abuse and Behavioral Disorder Counselor	840	46	$32,843	35	1.0%
Medical and Public Health Social Worker	730	40	$63,523	17	1.0%
Community and Social Service Specialist: Health Educator	1000	55	$73,216	22	0.8%

** Wage estimates represent the 25th and 75th percentiles respectively.*
Source: California Employment Development Department, Labor Market Information Division

Appendix D2.
Santa Clara County: 2006 Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by Occupation

Occupation	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year	Annual Growth Rate (%)
Dental Assistant	3100	170	$40,560	146	2.2%
Dental Hygienist	980	54	$64,000	31	2.4%
Medical Assistant	3050	168	$36,962	106	2.7%
Pharmacy Technician	1300	71	$40,373	33	2.1%
Home Health Aide	2130	117	$20,738	99	5.8%
Nursing Aide	5470	301	$32,261	138	1.5%
Licensed Vocational Nurse	2330	128	$57,886	67	0.9%
Nurse Practitioner (Registered Nurse)	–	–	–	–	–
Physician Assistant	220	12	$98,717	5	2.0%
Respiratory Therapist	520	29	$77,501	23	1.5%
Radiologic Technologist	–	–	$75,358	17	1.3%
Clinical Laboratory Scientist	770	42	$82,326	29	1.4%
EMT/Paramedic*	750	41	$22,318/ $33,467	17	1.3%
Psychiatric Technician	390	21	$49,254	3	0%
Mental Health Counselor	350	19	$45,760	8	1.3%
Mental Health and Substance Abuse Social Worker	1340	74	$43,347	16	1.3%
Substance Abuse and Behavioral Disorder Counselor	290	16	$35,755	8	1.4%
Medical and Public Health Social Worker	650	36	$58,906	12	1.2%
Community and Social Service Specialist: Health Educator	550	30	$49,109	9	1.4%

** Wage estimates represent the 25th and 75th percentiles respectively.*
Source: California Employment Development Department, Labor Market Information Division

Appendix D3.
Alameda/Contra Costa Counties: 2006 Estimated Employment, Employment per Population, 2007 Median Annual Wage and 2004-2014 Job Openings/Year by Occupation

Occupation	Estimated Employment	Estimated Employment per 100,000 Population	Median Annual Wage	Avg. # of Job Openings Per Year	Annual Growth Rate (%)
Dental Assistant	3260	127	$40,248	132	1.1%
Dental Hygienist	1930	75	$100,859	48	1.2%
Medical Assistant	3860	150	$34,278	81	2.1%
Pharmacy Technician	1580	61	$38,000	45	2.0%
Home Health Aide	4030	157	$21,861	203	4.7%
Nursing Aide	7310	284	$28,933	222	1.6%
Licensed Vocational Nurse	3470	135	$57,304	104	0.9%
Nurse Practitioner (Registered Nurse)	–	–	–	–	–
Physician Assistant	820	32	$89,232	47	2.5%
Respiratory Therapist	660	26	$67,704	40	2.0%
Radiologic Technologist	920	36	$73,320	27	1.3%
Clinical Laboratory Scientist	820	32	$70,075	25	1.3%
EMT/Paramedic*	–	–	$21,860/ $29,328	17	0.5%
Psychiatric Technician	–	–	$46,550	4	0%
Mental Health Counselor	800	31	$40,747	27	1.4%
Mental Health and Substance Abuse Social Worker	530	21	$42,016	24	2.0%
Substance Abuse and Behavioral Disorder Counselor	680	26	$32,885	31	2.1%
Medical and Public Health Social Worker	1550	60	$57,949	33	1.2%
Community and Social Service Specialist: Health Educator	910	35	$49,213	18	1.1%

** Wage estimates represent the 25th and 75th percentiles respectively.*
Source: California Employment Development Department, Labor Market Information Division

Appendix E lists all of the education institutions in each county that we identified as offering one of the selected allied health education programs, including those that did not report any student data. It is not meant to be an exhaustive catalog of all available training opportunities in the region, there may be other institutions we were not able to identify. As noted, these appendices include both schools that reported graduates, and non-reporting schools that we were able to identify through other sources. Sometimes schools mistakenly report graduates of programs they don't actually offer. Short of combing through the catalog of each individual institution in the region, we've made efforts to verify that schools reporting graduates of one of the selected allied health education programs actually hosts that program.

Appendix E1.
Marin County: Program and Institution Listing

Program and Institution	City	Zip
Dental Assistant		
College of Marin	Kentfield	94904
Medical Assistant		
College of Marin	Kentfield	94904
Marin Regional Occupational Program	San Rafael	94903
Pharmacy Technician		
Tamalpais Adult Education (online)		
Home Health Aide		
Marin County Regional Occupational Program	San Rafael	94903
Nursing Assistant/Aide		
Fifth Avenue Convalescent Hospital	San Rafael	94901
Hillside Care Center	San Rafael	94903
Healthcare Management Training Center – San Rafael	San Rafael	94903
Nazareth House	San Rafael	94903
Rafael Convalescent Hospital	San Rafael	94903
Marin County Regional Occupational Program	San Rafael	94913
EMT/Paramedic		
College of Marin	Kentfield	94904
Clinical/Counseling Psychology		
Dominican University of California	San Rafael	94901

Appendix E2.
San Francisco County: Program and Institution Listing

Program and Institution	City	Zip
Dental Assistant		
Bryman College	San Francisco	94103
Everest College – San Francisco	San Francisco	94103
City College of San Francisco	San Francisco	94112
Dental Hygienist		
University of California – San Francisco	San Francisco	94143
Medical Assistant		
Bryman College	San Francisco	94103
Everest College – San Francisco	San Francisco	94103
Heald College – San Francisco	San Francisco	94105
City College of San Francisco	San Francisco	94112
Pharmacy Technician		
Bryman College	San Francisco	94103
Everest College – San Francisco	San Francisco	94103
City College of San Francisco	San Francisco	94112
Home Health Aide		
Arriba Juntos Home Health	San Francisco	94103
On Lok Senior Health Services	San Francisco	94109
City College of San Francisco – John Adams Campus	San Francisco	94117
City College of San Francisco – Southeast Campus	San Francisco	94124
City College of San Francisco – Chinatown	San Francisco	94133
Nursing Assistant/Aide		
Arriba Juntos	San Francisco	94103
The Tunnell Center for Rehabilitation and Healthcare	San Francisco	94109
California Nurses Institute	San Francisco	94112
Jewish Home	San Francisco	94112
Victorian Healthcare Center	San Francisco	94115
City College of San Francisco – John Adams Campus	San Francisco	94117
Grove Street Extended Care and Living Center	San Francisco	94117
City College of San Francisco – Southeast Campus	San Francisco	94124

Appendix E2. (continued)
San Francisco County: Program and Institution Listing

Program and Institution	City	Zip
Licensed Vocational Nurse		
Unitek College – San Francisco	San Francisco	94102
California Nurses and Vocational Institute	San Francisco	94112
City College of San Francisco	San Francisco	94117
Nurse Practitioner		
San Francisco State University	San Francisco	94132
University of California – San Francisco	San Francisco	94143
Radiologic Technologist		
City College of San Francisco	San Francisco	94112
EMT/Paramedic		
City College of San Francisco	San Francisco	94112
Clinical Laboratory Scientist		
University of California - San Francisco	San Francisco	94107
San Francisco State University	San Francisco	94132
Clinical/Counseling Psychology		
California Institute of Integral Studies	San Francisco	94103
New College of California	San Francisco	94110
Saybrook Graduate School and Research Center	San Francisco	94111
University of San Francisco	San Francisco	94117
San Francisco State University	San Francisco	94132
Alliant International University	San Francisco	94133
Substance Abuse/Addiction Counseling (Associate's)		
City College of San Francisco	San Francisco	94112
Social Work (Master's)		
San Francisco State University	San Francisco	94132
Public Health		
City College of San Francisco	San Francisco	94112
San Francisco State University	San Francisco	94132
University of California - San Francisco	San Francisco	94143

Appendix E3.
San Mateo County: Program and Institution Listing

Program and Institution	City	Zip
Dental Assistant		
San Mateo County Regional Occupational Program	Redwood City	94065
College of San Mateo	San Mateo	94402
Medical Assistant		
Canada College	Redwood City	94061
College of San Mateo	San Mateo	94402
Pharmacy Technician		
Jefferson Adult School	Daly City	94015
Skyline College	San Bruno	94066
South San Francisco Adult Education	South San	94080
Home Health Aide		
Providence Vocational School	Daly City	94404
Opportunities Industrialization Center West	Menlo Park	94025
San Mateo County Regional Occupational Program	Redwood City	94065
Nursing Care Providers	San Bruno	94066
Nursing Assistant/Aide		
Providence Vocational School	Daly City	94014
St. Francis Convalescent Hospital	Daly City	94015
OICW, Inc.	Menlo Park	94025
Sequoia Adult School	Menlo Park	94025
Emmanuel Convalescent Hospital – Millbrae	Millbrae	94030
Millbrae Serra Convalescent Hospital	Millbrae	94030
San Mateo County Regional Occupational Program	Redwood City	94065
Facets of Nursing	San Bruno	94066
Nursing Care Providers Vocational School	South San	94080
Licensed Vocational Nurse		
Bay Area College of Nursing, Inc.	Daly City	94014
Gurnick Academy of Medical Arts – Concord	Concord	94519
Boston Reed College – Martinez Adult Education Center	Martinez	94553
Los Medanos College	Pittsburg	94565

Appendix E3. (continued)
San Mateo County: Program and Institution Listing

Program and Institution	City	Zip
Respiratory Therapist		
Skyline College	San Bruno	94066
Radiologic Technologist		
Canada College	Redwood City	94061
EMT/Paramedic		
Skyline College	San Bruno	94066
College of San Mateo	San Mateo	94402
Clinical/Counseling Psychology		
Notre Dame de Namur University	Belmont	94002
Substance Abuse/Addiction Counseling (Associate's)		
Notre Dame de Namur University	Belmont	94002
College of San Mateo	San Mateo	94402
Public Health		
Canada College	Redwood City	94061
College of San Mateo	San Mateo	94402

Appendix E4.
Santa Clara County: Program and Institution Listing

Program and Institution	City	Zip
Dental Assistant		
Santa Clara County Regional Occupational Program - South	Gilroy	95020
Foothill College	Los Altos Hills	94022
Bryman College – San Jose	San Jose	95128
Everest College – San Jose	San Jose	95128
San Jose City College	San Jose	95128
Metropolitan Adult Education	San Jose	95136
Dental Hygienist		
Foothill College	Los Altos Hills	94022
Medical Assistant		
De Anza College	Cupertino	95014
Heald College – San Jose	Milpitas	95035
CET – Sobrato	San Jose	95110
Bryman College – San Jose	San Jose	95128
Everest College – San Jose	San Jose	95128
San Jose City College	San Jose	95128
Evergreen Valley College	San Jose	95135
Institute for Business and Technology	Santa Clara	95051
West Valley College	Saratoga	95070
Pharmacy Technician		
Foothill College	Los Altos Hills	94022
Milpitas Adult Education	Milpitas	95035
Mountain View-Los Altos Adult Education	Mountain View	94043
Palo Alto Adult Education	Palo Alto	94301
Bryman College – San Jose	San Jose	95128
East Side Adult Education	San Jose	95133
Home Health Aide		
De Anza Community College	Cupertino	95014
Gavilan College	Gilroy	95020
Solano School of Nursing Assistance	Milpitas	94590

Appendix E4. (continued)
Santa Clara County: Program and Institution Listing

Program and Institution	City	Zip
Home Health Aide (continued)		
Palo Alto Center for Healthcare Education	Palo Alto	94303
Pacific Training Center	San Jose	95126
Olsten Kimberly Quality Care	San Jose	95128
Westmed Training	San Jose	95128
Central County Occupational Center	San Jose	95136
Home Health Plus – Santa Clara	Santa Clara	95050
Mission College/West Valley College	Santa Clara	95054
Sunnyvale-Cupertino Adult Education	Sunnyvale	94087
Nursing Assistant/Aide		
De Anza Community College	Cupertino	95014
Pleasant View Convalescent Hospital	Cupertino	95014
Gavilan College	Gilroy	95020
Gilroy Health Care and Rehabilitation Center	Gilroy	95020
Los Altos Subacute Rehabilitation Center	Gilroy	95020
Santa Clara County Regional Occupational Program - South	Gilroy	95020
Terreno Gardens	Los Gatos	95030
Solano School of Nursing	Milpitas	95035
Pacific Hills Manor	Morgan Hill	95037
Grant Cuesta Nursing and Rehabilitation Hospital	Mountain View	94040
Mountain View Healthcare Center	Mountain View	94040
Mountain View-Los Altos Adult Education	Mountain View	94043
Palo Alto Center for Healthcare Education	Palo Alto	94303
Emmanuel Convalescent Hospital – San Jose	San Jose	95116
Courtyard Care Center	San Jose	95117
San Tomas Convalescent Hospital.	San Jose	95117
St. Francis Career College	San Jose	95122
Pacific Training Center	San Jose	95126
Empress Care Center, LLC	San Jose	95128
Skyline Convalescent Hospital	San Jose	95128

Appendix E4. (continued)
Santa Clara County: Program and Institution Listing

Program and Institution	City	Zip
Nursing Assistant/Aide (continued)		
Winchester Living Center	San Jose	95128
Amberwood Gardens	San Jose	95129
WestMed College	San Jose	95129
Agnews State Hospital	San Jose	95134
Central County Occupational Center	San Jose	95136
Mission Skilled Nursing Center	Santa Clara	95050
Mission College	Santa Clara	95054
Valley House Care Center	Santa Clara	95054
Our Lady of Fatima Villa	Saratoga	95070
Saratoga Retirement Community Healthcare Center	Saratoga	95070
Sunnyvale-Cupertino Adult and Community Education	Sunnyvale	94087
Licensed Vocational Nurse		
Gavilan College	Gilroy	95020
Bay Area College of Nursing, Inc.	Palo Alto	94303
Institute of Medical Education	San Jose	95113
Western Career College – San Jose	San Jose	95119
St. Francis Career College – San Jose	San Jose	95122
WestMed College – San Jose	San Jose	95129
Central County Occupational Center	San Jose	95136
Mission College	Santa Clara	95054
Unitek College – Santa Clara	Santa Clara	95054
Nurse Practitioner		
San Jose State University	San Jose	95192
Physician Assistant		
Foothill College	Los Altos	94022
Respiratory Therapist		
Foothill College	Los Altos	94022
Radiologic Technologist		
Foothill College	Los Altos	94022

Appendix E4. (continued)
Santa Clara County: Program and Institution Listing

Program and Institution	City	Zip
EMT/Paramedic		
Foothill College	Los Altos	94022
Gavilan College	Gilroy	95020
Clinical Laboratory Scientist		
San Jose State University	San Jose	95192
Psychiatric Technician		
Mission College	Santa Clara	95054
Clinical/Counseling Psychology		
Institute of Transpersonal Psychology	Palo Alto	94303
Pacific Graduate School of Psychology	Palo Alto	94303
San Jose State University	San Jose	95192
Santa Clara University	Santa Clara	95053
Substance Abuse/Addiction Counseling (Associate's)		
San Jose City College	San Jose	95128
Social Work (Master's)		
San Jose State University	San Jose	95192
Public Health		
San Jose State University	San Jose	95192
Mission College	Santa Clara	95054

Appendix E5.
Alameda County: Program and Institution Listing

Program and Institution	City	Zip
Dental Assistant		
College of Alameda	Alameda	94501
Silicon Valley College	Fremont	94538
Western Career College-Fremont	Fremont	94538
Eden Area Regional Occupational Program	Hayward	94545
Heald College-Hayward	Hayward	94545
Lincoln University	Oakland	94612
Western Career College-San Leandro	San Leandro	94578
Dental Hygienist		
Chabot College	Hayward	94545
Western Career College – Fremont	Fremont	94538
Medical Assistant		
Medacom College	Fremont	94538
Silicon Valley College – Fremont	Fremont	94538
Western Career College – Fremont	Fremont	94538
Everest College – Hayward	Hayward	94541
Bryman College – Hayward	Hayward	94545
Chabot College	Hayward	94545
Heald College – Hayward	Hayward	94545
Medacom College	Newark	94560
Lincoln University	Oakland	94612
Western Career College – San Leandro	San Leandro	94578
Pharmacy Technician		
Silicon Valley College – Emeryville	Emeryville	94608
Western Career College – Emeryville	Emeryville	94608
Mission Valley Regional Occupational Program	Fremont	94538
Silicon Valley College – Fremont	Fremont	94538
Western Career College – Fremont	Fremont	94538
Livermore Adult Education	Livermore	94550
San Leandro Adult School	San Leandro	94577
Western Career College – San Leandro	San Leandro	94578
New Haven Adult School	Union City	94587

Appendix E5. (continued)
Alameda County: Program and Institution Listing

Program and Institution	City	Zip
Home Health Aide		
Alameda Adult School	Alameda	94501
Berkeley Adult School	Berkeley	94702
Mission Valley Regional Occupational Program	Fremont	94538
On Lok Senior Health Services	Fremont	94539
Advanced Pro Nursing Institute	Hayward	94545
Chabot College	Hayward	94545
Eden Area Regional Occupational Program	Hayward	94545
Tri Valley Regional Occupational Program/	Livermore	94550
Around the Clock Education Center	Oakland	94601
Edward Shands Adult School	Oakland	94605
Oakland Adult and Career Education	Oakland	94608
Merritt College	Oakland	94619
Nightingale Nursing	San Leandro	94517
San Leandro Adult School	San Leandro	94577
VIP Nursing School, Inc.	San Leandro	94578
Nursing Assistant/Aide		
Alameda Adult School	Alameda	94501
Emmanuel Convalescent Hospital	Alameda	94501
The Water's Edge	Alameda	94501
Berkeley Adult School	Berkeley	94702
Berkeley Pines Care Center	Berkeley	94705
Castro Valley Adult School	Castro Valley	94546
Castro Valley Care Center	Castro Valley	94546
Prime Career College of Fremont	Fremont	94536
Crestwood Manor	Fremont	94538
Fremont Healthcare Center	Fremont	94538
Mission Valley Regional Occupational Program	Fremont	94538
Hayward Adult School	Hayward	94541
Gateway Care and Rehabilitation Center	Hayward	94544

Appendix E5. (continued)
Alameda County: Program and Institution Listing

Program and Institution	City	Zip
Nursing Assistant/Aide (continued)		
Parkview Healthcare Center	Hayward	94544
Vintage Estates of Hayward	Hayward	94544
Advanced Pro Nursing Institute	Hayward	94545
Eden Area Regional Occupational Program	Hayward	94545
Hacienda Care Center	Livermore	94550
Tri-Valley Regional Occupational Program	Livermore	94550
Around the Clock Educational Center	Oakland	94601
Bellaken Career Center	Oakland	94601
Fruitvale Health Care Center	Oakland	94601
Oakridge Care Center	Oakland	94602
Edward Shands Adult School	Oakland	94605
Clinton Village	Oakland	94606
Oakland Adult and Career Education	Oakland	94608
Oakland Nursing and Rehabilitation Center	Oakland	94609
Bellaken Skilled Nursing Center	Oakland	94610
Excell Health Care Center	Oakland	94619
Merritt College	Oakland	94619
Willow Tree Convalescent Hospital	Oakland	94621
Pleasanton Nursing and Rehabilitation Center	Pleasanton	94566
Nightingale Nursing	San Leandro	94517
San Leandro Adult School	San Leandro	94577
VIP Nursing School, Inc.	San Leandro	94578
San Lorenzo Adult School	San Lorenzo	94580
James Logan High School	Union City	94587
Contra Costa Regional Occupational Program	Walnut Creek	94598
Licensed Vocational Nurse		
Medacom College	Fremont	94538
Unitek College – Fremont	Fremont	94538
Medical Career College	Fremont	94539
Nursing Care Providers – Hayward	Hayward	94541
Advanced Pro Nursing Institute	Hayward	94545

Appendix E5. (continued)
Alameda County: Program and Institution Listing

Program and Institution	City	Zip
Licensed Vocational Nurse (continued)		
Around the Clock Educational Center	Oakland	94601
Merritt College	Oakland	94619
Nightingale School of Nursing	San Leandro	94577
San Leandro Adult School	San Leandro	94577
Western Career College – San Leandro	San Leandro	94578
Nurse Practitioner		
Samuel Merritt College	Oakland	94609
Holy Names University	Oakland	94619
Physician Assistant		
Samuel Merritt College	Oakland	94609
Respiratory Therapist		
Ohlone College	Fremont	94539
Radiologic Technologist		
Merritt College	Oakland	94619
EMT/Paramedic		
Chabot College	Hayward	94545
Los Positas College	Livermore	94551
Merritt College	Oakland	94619
Clinical/Counseling Psychology		
Argosy University – San Francisco Bay Area Campus	Alameda	94501
The Wright Institute	Berkeley	94704
Holy Names University	Oakland	94619
Substance Abuse/Addiction Counseling (Associate's)		
Merritt College	Oakland	94619
Social Work (Master's)		
University of California – Berkeley	Berkeley	94720
California State University – East Bay	Hayward	94542
Public Health		
University of California – Berkeley	Berkeley	94720

Appendix E6.
Contra Costa County: Program and Institution Listing

Program and Institution	City	Zip
Dental Assistant		
Mt. Diablo Adult Education	Concord	94518
Heald College – Concord	Concord	94520
Diablo Valley College	Pleasant Hill	94523
Western Career College – Pleasant Hill	Pleasant Hill	94523
Contra Costa College	San Pablo	94806
Dental Hygienist		
Diablo Valley College	Pleasant Hill	94523
Medical Assistant		
Mt. Diablo Adult Education	Concord	94518
Heald College – Concord	Concord	94520
Western Career College – Pleasant Hill	Pleasant Hill	94523
Contra Costa College	San Pablo	94806
Pharmacy Technician		
Antioch Adult School	Antioch	94509
Mt. Diablo Adult Education	Concord	94518
Martinez Adult Education	Martinez	94553
Pittsburg Adult Education Center	Pittsburg	94565
Western Career College – Pleasant Hill	Pleasant Hill	94523
Home Health Aide		
Mt. Diablo Adult Education	Concord	94518
TLC School of Nursing	Hercules	94547
Pittsburg Adult Education Center	Pittsburg	94565
Nightingale Nursing of Contra Costa	Pleasant Hill	94523
West Contra Costa Adult Education	Richmond	94805
Lastel Learning and Skill Center	Richmond	94808
Contra Costa College	San Pablo	94806

Appendix E6. (continued)
Contra Costa County: Program and Institution Listing

Program and Institution	City	Zip
Nursing Assistant/Aide		
Lone Tree Convalescent Hospital	Antioch	94509
Mt. Diablo Adult Education	Concord	94518
San Miguel Villa	Concord	94518
Willow Pass Healthcare Center	Concord	94519
College of Medical Arts	El Cerrito	94530
TLC School of Nursing	Hercules	94547
Alhambra Convalescent Hospital	Martinez	94553
Rheem Valley Convalescent Hospital	Moraga	94556
Diamond Ridge Healthcare Center	Pittsburg	94565
Pittsburg Adult Education Center	Pittsburg	94565
Pittsburg Care Center	Pittsburg	94565
Contra Costa Regional Occupational Program	Pleasant Hill	94523
Nightingale of Contra Costa	Pleasant Hill	94523
Rosewood Care Center	Pleasant Hill	94523
West Contra Costa Adult Education	Richmond	94805
Lastel Learning and Skill Center	Richmond	94808
Contra Costa College	San Pablo	94806
Licensed Vocational Nurse		
Western Career College – Antioch	Antioch	94531
Gurnick Academy of Medical Arts – Concord	Concord	94519
Boston Reed College – Martinez Adult Education Center	Martinez	94553
Los Medanos College	Pittsburg	94565
Respiratory Therapist		
Diablo Valley College	Pleasant Hill	94523
Radiologic Technologist		
Contra Costa College	San Pablo	94806

Appendix E6. (continued)
Contra Costa County: Program and Institution Listing

Program and Institution	City	Zip
EMT/Paramedic		
Mt. Diablo Adult Education	Concord	94518
Los Medanos College	Pittsburg	94565
West Contra Costa Adult Education	Richmond	94804
Contra Costa College	San Pablo	94806
Contra Costa College	San Pablo	94806
Clinical/Counseling Psychology		
John F. Kennedy University	Pleasant Hill	94523
Argosy University – San Francisco Bay Area Campus	Richmond	94804
Center for Psychological Studies	Richmond	94805
Substance Abuse/Addiction Counseling (Associate's)		
Diablo Valley College	Pleasant Hill	94523

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